LAHIRI'S

INDIAN EPHEMERIS

OF

PLANETS' POSITIONS

ACCORDING TO THE *'NIRAYANA'* or SIDEREAL SYSTEM

FOR 2019 A. D.

ASTRO-RESEARCH BUREAU
KOLKATA

PRINCIPAL FESTIVALS AND ANNIVERSARIES, 2019 A.D.

English New Year's Day	Jan.	1	Tues.
Birthdat of Swami Vivekananda	Jan.	12	Sat.
Lohri (Punjab, J. & K.)	Jan.	13	Sun..
Bhogi (S. India)	Jan.	14	Mon.
Magha Bihu	Jan.	14	Mon.
Makara Sankranti Snana (W. Bengal)	Jan.	14	Mon.
Pongal (S. India)	Jan.	15	Tues.
Tai Pongal (Kerala)	Jan.	15	Tues.
Tamil Nadu New Year's Day	Jan.	15	Tues.
Mattu Pongal or Kanuvu (S.India)	Jan.	16	Wed.
Floating Festival (Tai Poosam)	Jan.	21	Mon.
Netaji's Birthday	Jan.	23	Wed.
Republic Day	Jan.	26	Sat.
Birth Tithi of Swami Vivekananda	Jan.	27	Sun.
Birthday of Lala Lajpath Rai	Jan.	28	Mon.
Martyr's Day (Mahatma Gandhi Commemoration day)	Jan.	30	Wed.
Ratanti Kalika Puja	Feb.	2	Sat.
Mauni Amavasya	Feb.	4	Mon.
Magha Sukladi	Feb.	5	Tues.
Vasanta Panchami	Feb.	10	Sun.
Saraswati Puja	Feb.	10	Sun.
Desert Festival -3 days (Jaisalmer)	Feb.	17	Sun.
Guru Rabi Das's Birthday	Fev.	19	Tues.
Sivaji Jayanti	Feb.	19	Tues.
Birth Day of Swami Dayananda Saraswati	Mar.	1	Fri.
Maha Sivaratri	Mar.	4	Mon.
Birth Tithi of Shri Ramakrishna Dev	Mar.	8	Fri.
Holikadahana	Mar.	20	Wed.
Birthday Tithi of Shri Chaitanya	Mar.	21	Thurs.
Dolyatra (W. Bengal)	Mar.	21	Thurs.
Holi, Hola, Vasantotsava	Mar.	21	Thurs.
INDIAN NEW YEAR'S DAY (1941 SAKA ERA)	Mar.	22	Fri.
Varsitapa Parva begins (Jain)	Mar.	28	Thurs.
Cheti Chand (Sindhi New Year's Day)	Apr.	6	Sat.
Chaitra Sukladi, Gudi Padva, Ugadi	Apr.	6	Sat.
Telugu New Year's Day	Apr.	6	Sat.
Gangaur (Gauri Tritiya)	Apr.	8	Mon.
Sarhul (Bihar)	Apr.	8	Mon.
Oli Begins (Jain)	Apr.	11	Thurs.
Basanti Durga Puja (Saptami)	Apr.	12	Fri.
Annapurna Puja	Apr.	13	Sat.
Ramanavami	Apr.	14	Sat.
Vishu (Kerala)	Apr.	14	Sun.
Vaisakhi (Delhi, Punjab, Haryana, H.P. & Orissa)	Apr.	14	Sun.
Cheiraoba (Manipur).	Apr.	14	Sun.
Meshadi	Apr.	14	Sun.
Dr. B. R. Ambedkar Jayanti	Apr.	14	Sun.
Vaisakhadi (Bengal and Assam New Year's Day)	Apr.	15	Mon.
Bohag Bihu (Assam)	Apr.	15	Mon.
Mahavira Jayanti (Jain)	Apr.	17	Wed.
Oli ends (Jain)	Apr.	19	Fri.
Hanumat Jayanti (S. India)	Apr.	19	Fri.
Babu Kuer Singh Day (Bihar)	Apr.	23	Tues.
Shri Vallabacharya Jayanti	Apr.	30	Tues.
May Day	May	1	Wed.
Tithi of Sri Deva Damodar (Assam)	May	5	Sun.
Varsitapa Parva ends (Jain)	May	7	Tues.
Akshaya Tritiya	May	7	Tues.
Shri Sankaracharya Jayanti	May	9	Thurs.
Birthday of Rabindranath Tagore	May	9	Thurs.
Sri Ramanujacharya Jayanti	May	10	Fri.
Sita Navami (Janaki Navami)	May	13	Mon.
Trichur Pooram (Kerala)	May	14	Tues.
Minakshi Kalyanam	May	14	Tues.
Buddha Purnima	May	18	Sat.
Maharaja Pratap Jayanti (Rajasthan)	Jun.	6	Thurs.
Guru Arjan Dev's Martyrdom Day (Sikh)	Jun.	7	Fri.
Jamatri Sasthi, Jamai Sasthi (W. Bengal)	Jun.	8	Sat.
Ganga Dasahara	Jun.	12	Wed.
Rajas Samkranti (Orissa)	Jun.	15	Sat.
Deva Snana Purnima	Jun.	17	Mon.
Guru Hargovind's Birthday	Jun.	18	Tues.
Birthday of Poet Bhanu Bhakt	Jul.	13	Sat.
Rathayatra	Jul.	4	Thurs.
Kharchi Puja (Tripura)	Jul.	9	Tues.
Punaryatra (W. Bengal)	Jul.	11	Thurs.
Ultorath (Orissa)	Jul.	12	Fri.
Guru Purnima, Vyasa Puja	Jul.	16	Tues.
Manasa Puja Begins (W. Bengal)	Jul.	17	Wed.
Naga Panchami (W. Bengal)	Jul.	22	Mon.
Ker Puja (Tripura)	Jul.	23	Tues.
Tilak Commemoration Day	Aug.	1	Thurs.
Teej (Madhusrava Tritiya)	Aug.	3	Sat.
Naga Panchami (except W. Bengal & Orissa)	Aug.	5	Mon.
Goswamy Tulsidas Jayanti	Aug.	7	Wed.
Jhulana Yatrarambha	Aug.	10	Sat.
Independence Day	Aug.	15	Thurs.
Jhulana Yatra Samapana	Aug.	15	Thurs.
Avani Avittam (S. India)	Aug.	15	Thurs.
Raksha Bandhan	Aug.	15	Thurs.
Vaikhanasa Jayanti (S.India)	Aug.	15	Thurs.
Jhulana Purnima	Aug.	15	Thurs.
Solono (Delhi)	Aug.	15	Thurs.
Manasa Puja ends (W. Bengal)	Aug.	17	Sat.
Simhadi (Kerala New Year's Day)	Aug.	17	Sat.
Tithi of Shri Madhava Deva (Assam)	Aug.	20	Tues.
Sri Krishna Jayanti (Assam, Tamilnadu, Kerala)	Aug.	23	Fri.
Janmastami (Vaishnava)	Aug.	24	Sat.
Shri Jayanti (Ramanuja)	Aug.	24	Sat.
Nandotsava, Gokulastami	Aug.	25	Sun.
Paryusana Parvarambha (Jain)	Aug.	26	Mon.
Jain Festival	Aug.	30	Fri.
Tithi of Shri Sankara Deva (Assam)	Sep.	1	Sun.
Ganesh Chaturthi, Vinayaka Chaturthi	Sep.	2	Mon.
Samvatsari (Jain-Chaturthi Paksha)	Sep.	2	Mon.
Samvatsari (Jain-Panchami Paksha)	Sep.	3	Tues.
Radhastami	Sep.	6	Fri.
Birthday Tithi of Shri Anukul Thakur	Sep.	7	Sat.
Karma (Bihar)	Sep.	9	Sun.
First Onam Day	Sep.	10	Tues.
Onam (Thiru Onam Day)	Sep.	11	Wed.
Ananta Chaturdasi	Sep.	12	Thurs.
Sri Narayana Guru Dev's Birthday (Kerala)	Sep.	13	Fri.
Visvakarma Puja	Sep.	17	Tues.
Samadhi Day of Sri Narayana Guru (Kerala)	Sep.	21	Sat.
Jitia (Bihar)	Sep.	22	Sun.
Mahalaya Amavasya	Sep.	28	Sat.
Maharaja Agrasen's Jayanti	Sap.	29	Sun.
Mahatma Gandhi's Birthday	Oct.	2	Wed.
Oli begins (Jain)	Oct.	5	Sat.
Durga Puja (Saptami)	Oct.	5	Sat.
Durga Puja (Mahastami)	Oct.	6	Sun.
Durga Puja (Mahanavami),	Oct.	7	Mon.
Durga Puja (Vijaya Dasami) ,Dussehra	Oct.	8	Tues.
Kojagari Lakshmi Puja (W. Bengal)	Oct.	13	Sun.
Maharshi Valmiki's Birthday	Oct.	13	Sun.
Oli ends (Jain)	Oct.	13	Sun.
Kati Bihu (Assam)	Oct.	18	Fri
Dhana Trayodasi	Oct.	25	Fri.
Naraka Chaturdasi Dipavali (S. India)	Oct.	27	Sun.
Hanumat Jayanti (N. India)	Oct.	27	Sun.
Kali Puja (Lakshmi Puja)	Oct.	27	Sun.
Maha Lakshmi Puja	Oct.	27	Sun.
Dipavali (Diwali)	Oct.	27	Sun.
Mahavira Nirvana (Jain)	Oct.	27	Sun.
Kartika Sukladi	Oct.	28	Mon.
Bhai Duj, Dwat Puja (Bihar)	Oct.	29	Tues.
Bhratri Dvitiya, (W. Bengal)	Oct.	29	Tues.
Chhat Puja (Bihar)	Nov.	2	Sat.
Jagaddhatri Puja	Nov.	5	Tues.
Tulasi Vivaha	Nov.	8	Fri.
Vaikuntha Chaturdasi (Pradosh)	Nov.	11	Mon.
Rasayatra (Smarta)	Nov.	11	Mon.
Rasayatra (Vaishnava)	Nov.	12	Tues.
Rathayatra (Jain)	Nov.	12	Tues.
Kartiki Purnima, Puskar Fair, Rasa Purnima	Nov.	12	Tues.
Guru Nanak's Birthday	Nov.	12	Tues.
Children's Day	Nov.	14	Thurs.
Kartika Puja	Nov.	17	Sun.
Death Anniversary of Lala Lajpath Rai	Nov.	17	Sun.
Guru Teg Bahadur's Martyrdom Day	Nov.	24	Sun.
Vivah Panchami (Bihar)	Dec.	1	Sun.
Asom Divas	Dec.	2	Mon.
Gita Jayanti	Dec.	8	Sun.
Mauni Ekadasi(Jain)	Dec.	8	Sun.
Birthday of Parsvanath(Jain)	Dec.	12	Sat.

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INDIAN EPHEMERIS
OF
PLANETS' POSITIONS
ACCORDING TO THE *'NIRAYANA'* OR SIDEREAL SYSTEM
FOR 2019 A.D.

Saka Era 1940-1941, Bengali Era 1425-1426, Samvat 2075-76

Indian Standard Time or the time for the Central Meridian of India ($82\frac{1}{2}$°E. Long.) observed throughout except where otherwise stated. This time may be converted into G. M. T. by subtraction of *5h 30m*

(Estimated value of Δ T in 2019 is + 69.0*s*)
(0^h E.T. = *5h 29m* I.S.T.)

(Eightyfirst Issue)

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Price : Rs. 200.00
$ 10 or £ 8.00

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PREFACE

This annual astronomical ephemeris has stepped into 81th year of its publication with the present issue for 2019. The Ephemeris was founded by late N. C. Lahiri in 1939, the first Indian member of the Ephemerides-Commission of the International Astronomical Union, Paris, and the first Officer-in-charge of the then Nautical Almanac Unit of the Govt. of India (now known as Positional Astronomy Centre) at Kolkata. The local almanacs published from different parts of India are still giving erroneous astronomical parameters for preparation of the almanacs. We are earnestly exerting our efforts for rectification of such parameters shown in those almanacs. This ephemeris is intended to provide most accurate and up-to-date astronomical data in advance to its users.

The ephemeris is based on *nirayana* or sidereal system of calculation. The basis of the nirayana zodiac is the adoption of 285 A. D. or 207 Saka as the *zero ayanamsa* year. This value was adopted by Shri N. C. Lahiri in this Ephemeris from 1948 issue. The Calendar Reform Committee appointed by the Govt. of India in 1952 recommended adoption of this value of *ayanamsa* and later the Govt. of India also adopted this system of *ayanamsa* in 1953. In view of this, it is called as *Lahiri-Ayanamsa.* This value of *ayanamsa* is now being used in almost all the reformed panchangs and ephemeris in India as well as in the *Indian Astronomical Ephemeris* and the *Rashtriya Panchangs* of the Govt. of India. It is worth mentioning that the date of coincidence of the *Sayana* and *Nirayana* zodiacs on the Vernal Equinox day of 285 A.D. based on the position of the star *Chitra* (α Virginis) in Spica as was determined by late N. C. Lahiri during his life time is almost the same as derived from the data available from the *Astronomisches Rechen Institute of Heidelberg, Germany.*

We express our thanks to the Director, Positional Astronomy Centre, Kolkata of India Meteorological Department (Govt. of India) for kindly supplying some astronomical data for use in the Ephemeris. Sincerest thanks are also to our esteemed readers and users of this ephemeris for their kind co-operation and suggestions. Suggestions for further improvement of this ephemeris would be highly appreciated. Utmost care is always taken to bring out this publication free of any error.

We are making best efforts to add each year some additional data which are to facilitate the users of this ephemeris for their computational work.

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September 15, 2018

M. K. Lahiri
Astro-Research Bureau

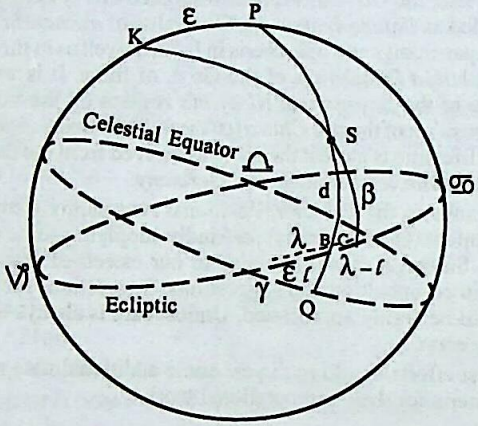
1910880

☉	—	Sun	Ravi, Surya	♈	—	Aries	0 Mesa
☽	—	Moon	Candra	♉	—	Taurus	1 Vrisa
☿	—	Mercury	Budha	♊	—	Gemini	2 Mithuna
♀	—	Venus	Sukra, Bhrigu	♋	—	Cancer	3 Karkata
♂	—	Mars	Mangala, Kuja	♌	—	Leo	4 Simha
♃	—	Jupiter	Brihaspati, Guru	♍	—	Virgo	5 Kanya
♄	—	Saturn	Sani	♎	—	Libra	6 Tula
♅	—	Uranus or Herschel	Indra, Prajapati	♏	—	Scorpio	7 Vriscika
♆	—	Neptune	Varuna	♐	—	Sagittarius	8 Dhanus
♇	—	Pluto	Rudra, Yama	♑	—	Capricornus	9 Makara
☊	—	Ascending Node or Dragon's head	Rahu	♒	—	Aquarius	10 Kumbha
☋	—	Descending Node or Dragon's tail	Ketu	♓	—	Pisces	11 Mina
⊕	—	Earth	Prithivi				

EXPLANATORY NOTES

The most important reference planes in astronomy are the celestial equator and the ecliptic. The positions of all heavenly bodies are usually given in terms of these planes taking the first point of Aries as the initial point. The celestial equator is the great circle of the celestial sphere in which the plane of the earth's equator cuts the celestial sphere. The apparent path of the Sun in the sky is known as the *ecliptic* and is the most important reference circle in the heavens. It is a great circle cutting the celestial equator at an angle of about $23\frac{1}{2}°$. The angle is 23° 26' 07.79" on Jan. 1, 2019 and known as *obliquity of the ecliptic.* The two points of intersection of the ecliptic with the celestial equator are called the First point of Aries (Vernal Equinox *i.e.* V.E.) and the First point of Libra (Autumnal Equinox) respectively. The First point of Aries is the ascending node of the Sun in relation to the ecliptic on the equator, when it passes from the south to the north. The position of the heavenly bodies in the sky is indicated by measuring their co-ordinates along the great circle of either the celestial equator or of the ecliptic and at right angles to them.

The position of a body on the celestial globe showing the spherical co-ordinates of a star is shown below.



Here,	P	=	Celestial Pole *(Dhruva)*
	γ Q ♎	=	Celestial equator
	K	=	Pole of the ecliptic *(Kadamba)*
	γ ♋	=	Plane of the ecliptic
	γ	=	First point of Aries (Vernal Equinox)
	♋	=	First point of Cancer (Summer Solstice)
	♎	=	First point of Libra (Autumnal Equinox)
	♑	=	First point of Capricorn (Winter Solstice)
	S	=	A heavenly body
	PS	=	Great circle through P, S. cutting equator at Q.
	γ Q	=	Right Ascension = α
	QS	=	Declination = δ
	KS	=	Great circle through K, S. cutting ecliptic at C.
	γ C	=	Celestial longitude = λ
	CS	=	Celestial latitude = β
	γ B	=	Polar longitude or *Dhruvaka* = *l*
	BS	=	Polar latitude or *Vikshepa* = *d*

The last two peculiar co-ordinates, now no longer used.

The position of a stellar body may be defined by either its right ascension (α) and declination (δ) or its celestial longitude (λ) and latitude (β).

In order to obtain the *nirayana* (sidereal) longitudes of any celestial objects, the amount of *ayanamsa* is to be deducted from the corresponding values of the tropical *(Sayana)* longitudes.

EXPLANATORY NOTES

The initial point or reference point of the zodiac is fundamental for obtaining positions of the heavenly bodies. For measuring celestial longitude in the tropical system, the vernal equinoctial point, which is one of the intersection points of the ecliptic and the equator has been taken as the initial point. This initial point in the tropical system (*i.e.* V. E. point) does not occupy any fixed position among the stars, it always moves backward in the western direction in the starry heavens due to precession of the equinoxes with an annual motion of about 50.3" completing the circle in about 26000 years. The longitudes measured in this system is called the Tropical or *Sayana* longitude. In the Sidereal or *Nirayana* system the reference circle is the *ecliptic*.

In the *Sidereal or Indian system*, in order to stabilise the zodiac, a point has been taken as the origin which is permanently fixed on the ecliptic, so that co-ordinates of the fixed stars in the sky do not change. So in the Sidereal system, the reference point is a fixed point on the ecliptic in relation to some prominent stars, whose position is fixed in the sky. The *nirayana* longitudes of stars being nearly invariable, the Indian signs always contain the same star groups in the divisions.

The longitudes of celestial objects are measured from the fixed point on the ecliptic among the stars. The distance of this fixed initial point from the V. E. point (*i.e.* its celestial longitude) is called *Ayanamsa*. The longitude measured from this initial point is called *Nirayana* or Sidereal longitude.

In the nirayana system the problem of fixation of the initial point of the nirayana zodiac is found to be very much controversial— different organisations are following different values of *Ayanamsa* as obtained from their own observations. This problem was critically studied by late N. C. Lahiri during his life time. After many years of research and calculation, he concluded that the zodiacs of the two systems *i.e.* the tropical and the sidereal coincided in 285 A. D. The initial point of the sidereal zodiac was the same as the equinoctial point (*viz.*, First point of Aries) of the Vernal equinox day of 285 A.D. The star Spica (*Chitra* — α Virginis) was very close to the ecliptic and located at 180° (opposite to V. E. point) away from the vernal equinoctial point on March 22 of 285 A.D. when both the *sayana* and *nirayana* longitudes of the star *Chitra* (Spica) were the same as 180° 00' 03".

It is worth mentioning that the time of coincidence of the *Sayana* and *Nirayana* zodiacs was determined many years ago and obtained the above value by late N. C. Lahiri, former member of the Ephemerides-Commission of the International Astronomical Union (Paris). Recently the value was also computed from the past star positions at the V. E. point of 285 A. D. from the data as available from the *Astronomisches Rechen Institut of Heidelberg*, Germany, the well known International Astronomical Institute, being the authority as regards the position of stars and is found to be almost the same. The tropical longitude of the star *Spica* as computed from the data obtained from this Institute is also very near to 180° on the Vernal Equinox day of 285 A.D. The difference between the two sets of calculations, one by late N. C. Lahiri and the other is so small that no appreciable change in the value of *Ayanamsa* is at all needed.

According to the above initial point of the *nirayana* zodiac, the value of *Ayanamsa* comes out as 24° 07' 06" on Jan. 1, 2019. The nirayana longitude of the star Spica has been shown as 179° 59' 02" on Jan. 1, 2019. Due to proper motion, the nirayana longitude of the star Spica *(Chitra)* has, however, diminished by 1'1" during the period 1734 years from 285 A.D.

For the calculation of *Rasis* and *Nakshatras*, a fixed initial point on the ecliptic has been taken as the origin from which the longitudes are measured. The tropical longitude of this initial point on March 21, 1956 has been adopted as 23° 15' 00".

The Indian Astronomical Ephemeris of the Government of India adopted, on the basis of the recommendations of the Calendar Reform Committee, a value of *Ayanamsa* which was less by only 5".8 than the above. From the 1985 issue a minor correction of 0.658" has been made which has also been followed in this ephemeris according to the *Indian Astronomical Ephemeris*.

Details of the Ephemeris

In this ephemeris apparent geocentric sidereal *(Nirayana)* longitudes of the Sun, Moon and planets have been given daily for 0*h* Universal Time (U.T.) *i.e.* 0*h* G. M. T. (Greenwich mean Time at midnight) or 5*h* 30*m* a.m. Indian Standard Time (I.S.T.). The longitudes are *apparent geocentric positions* as seen from the centre of the Earth.

The topocentric positions i.e. the positions as seen by an observer at any specified point on the Earth's surface, slightly differ from the geocentric position, being 9 arc seconds for Sun, 62 arc minutes for Moon and 1 arc minute for planets. If topocentric positions are required, these have to be calculated separately.

The longitudes given daily may be interpolated for any required moment by using the daily motions of the planets. As a result of irregular rotation of the Earth, the Greenwich time determined from the Earth's rotation has been found inconvenient for calculation of planets' positions, for which *Ephemeris Time* or E.T. is now used. The mean elements of planets have accordingly been given in this book for 0*h* E.T. and for convenience of users the daily positions of planets have been given for 0*h* G.M.T. or U.T. or 5*h* 30*m* a.m. I.S.T.

The *Nirayana Longitude* as given in the Ephemeris is also obtainable by subtraction of *Ayanamsa* from the tropical or Sayana longitude given in western ephemerides. The first figure in the given nirayana longitude denotes the sign (indicated by the symbol^{s}, meaning sign or *Rasi)* of the *Nirayana* or fixed zodiac, *e.g.*, 0 means that the planet is in *Mesa* (Aries), 1 means *Vrisa* (Taurus), 2 *Mithuna* (Gemini), etc.

Sidereal Time is for 12*h* noon local mean time (L.M.T.) of $82\frac{1}{2}°$ East longitude, but is applicable for the whole of India without much modification for local mean noon. L.M.T. is to be used in determining the Sidereal time of any moment, but in finding the longitudes of planets etc. the Standard Time should be made use of.

Apparent Noon is the local mean time of Sun's meridian passage *viz.* the mid-day. The equation of time in the sense of correction applied to the local mean time to obtain the local apparent time, may be deduced as follows : Equation of time = 12*h* – Apparent noon.

Meridian passages (M.Pass) of the Moon (shown daily) and planets (at alternate days) given are in local mean time calculated for the Central Meridian of India. *viz.* for $82\frac{1}{2}°$ East longitude. With slight correction these may be used in *local mean time* for all other places. M. Pass. of a planet (other than the Moon) requires almost no correction for places in India. For the Moon, the given time of meridian passage should be diminished by 1 minute for Kolkata and eastern India and increased by 1 minute for Delhi, Mumbai and western India. For further west, it should be increased according to the daily variation of the M. Pass. time in proportion to the longitude west of India's central meridian. Apparently the planets rises in the eastern horizon nearly *6 hours* before M. Pass and sets nearly 6 *hours* after M. Pass.

The ending times of *Tithi, Nakshatra, Yoga* and *Karana* have been given daily in the Ephemeris as are current at 5-30 a.m. I.S.T. on the day.

The following prefixes and suffixes have been added to the longitude of planets in the daily Ephemeris :—

n, *n* = the planet changes the *nakshatra* by direct (n) or retrograde (*n*) motion, the number of the nakshatra division. *i.e.* the lunar mansion in which the planet is situated on the first day of the month has been shown at the top of the column of longitudes. In case of *Rahu,* the first figure represents the nakshatra of *Rahu* and the second figure that of *Ketu.*

R, *R* = the planet becomes retrograde (R), or has already become so (*R*).

D = the planet becomes direct.

s = the planet sets (s) heliacally.

s = the planet has already set (*s*)

r = the planet rises heliacally.

(☌, ☍) = the planet is in conjunction ☌ with the Sun or in opposition ☍ to the Sun.

e = the greatest elongation from the Sun on that day of the Inferior planets *i.e.* Mercury & Venus.

Details of the Ephemeris

The timings of ***Sunrise and Sunset*** as given in this Ephemeris are in I.S.T. The timings relate to the visibility of the *Sun's upper limb,* on the horizon, where time corrections for refraction and Sun's semi-diameter have been included. The sunrise and sunset times of the *Central Station of India* given in I.S.T. is the same as the L.M.T. of the Meridian of $82\frac{1}{2}°$E. Long. relate to the appearance and disappearance of the upper limb of the Sun on the horizon. The Local Mean Time of Sunrise and Sunset for a particular latitude may be used as L.M.T. for all places on the same *latitude.* As a result of refraction, the *centre of* the Sun becomes visible on the horizon about 2*m* 20*s* before the calculated time of Sunrise and remains so after the time of Sunset. For visibility of the Sun's *upper limb*, the above correction is about 3*m* 30*s,* the amount of horizontal refraction is taken as 31' and the semi-diameter as 16', so that the centre of the Sun is actually 47' below the horizon at such times of rising and setting.

Mean Rahu and True Rahu— As in the case of the Sun and the Moon, the Lunar Node (*i.e. Rahu*) has also got the *mean* position as well as the *true* position, the greatest difference between the two being about $1\frac{3}{4}°$ degrees. In view of the fact, that we are concerned only with the true or apparent position in case of planets, the position of *True Rahu* has been given in the daily ephemeris more accurately taking further terms of corrections from 1986 issue and for facility of the users the mean position has also been given daily. Motion of True *Rahu* is not uniform, sometime it becomes direct even. The motion of mean *Rahu* is, however, always retrograde and uniform.

National Calendar— In accordance with the recommendations of the Calendar Reform Committee, appointed by the Govt. of India in 1952, a reformed **Indian National Calendar** was introduced with effect from March 22, 1957 which was the starting date of the National Calendar—*Saka 1879, Chaitra 1.* The year of National Calendar begins with *Chaitra 1* on March 22 in a Gregorian common year and on March 21 in a leap year. The months of the Calendar have got fixed number of days.

The beginning dates of months are as follows :— Chaitra : Mar. 22 (Mar. 21 in a leap-year); Vaisakha-Apr. 21; Jyaistha-May 22; Asadha-June 22; Sravana-July 23; Bhadra -Aug. 23; Asvina-Sept. 23; Kartika-Oct. 23; Agrahayana-Nov. 22; Pausa-Dec. 22; Magha-Jan. 21 and Phalguna-Feb. 20.

Time reckoning in India

Originally cities of India used to maintain local time of her own. Before 1.1.1880 some provinces used time same as Calcutta local time. Afterwards the old Railway time, the same as the local time of Madras (now Chennai 5*h* 20*m* 50*s* ahead of G.M.T.) began to come into use. Thereafter, most cities gradually adopted this time.

Till 1905, the local Mean Time (L.M.T.) of the Madras observatory (5*h* 20*m* 50*s* ahead of G.M.T.) was used all over India by the Postal and Railway authorities. From January 1, 1906 the half hour time zone was adopted for the purpose and I.S.T. was introduced which related to the L.M.T. of 82° 30'E. Meridian, *i.e.* 5*h* 30*m* ahead of G.M.T. Since then this time is being used as I.S.T. except for the short period as stated below :—

From 1st September, 1942 to 14th October, 1945, the Indian Standard Time was advanced by one hour all over India including modern Bangladesh and Pakistan for purposes of day-light saving during the period and was thus 6*h* 30*m* ahead of G.M.T. Any recorded time of this period should therefore be reduced by *1 hour* to get I.S.T.

Kolkata and many places in Bengal and some places of the adjacent provinces like Bihar, Jharkhand, Assam and Orissa used to maintain local time instead of the standard time up to end of September 1941. The local standard time is known in some countries simply as local time.

Bengal Time was introduced from 1.10.41 during war time by Bengal Govt. which was more than one hour from I.S.T. Actually it was the Standard time of Burma (Myanmar). *Calcutta time* is less by 36*m* 30*s* from *Bengal time.* After that date there were changes of varying nature in the time reckoning of different places as stated overleaf.

Time Changes in India

In some parts of Bengal and adjoining areas	Before 1.10.41	L.M.T.	Reduction to I.S.T. – 0*h* 23*m*
Calcutta and adjoining areas	Before 1.10.41	Calcutta Local Time	– 0*h* 23*m*
Whole of Bengal	From 1.10.41 to 14.5.42	Bengal Time	– 1*h* 0*m*
Whole of Bengal	From 15.5.42 to 31.8.42	I.S.T.	0*h* 0*m*
Whole of Bengal	From 1.9.42 to 31.8.47	Bengal Time	– 1*h* 0*m*
West Bengal	Since 1.9.1947	I.S.T.	0*h* 0*m*
Assam (Before 1.11.1941-L.M.T.)	From 1.11.41 to 14.5.42 & 1.9.42 to 14.10.45	Same as Bengal Time	– 1*h* 0*m*
	From 15.5.42 to 31.8.42 & From 15.10.1945	Same as I.S.T.	0*h* 0*m*
Bihar (Before 1.12.1941-L.M.T.) Jharkhand	From 1.12.41 to 14.5.42 & 1.9.42 to 14.10.45	Same as Bengal Time	– 1*h* 0*m*
	From 15.5.42 to 31.8.42	Same as I.S.T.	0*h* 0*m*
Goa (Before 18.7.1911 - L.M.T.)	From 18.7.1911 to 31.8.42	Same as I.S.T.	0*h* 0*m*
	From 1.9.42. to 14.10.45	Same as Bengal Time	– 1*h* 0*m*
	From 15.10.45	Same as I.S.T.	0*h* 0*m*
Rest of India (Before 1.1.1880 - L.M.T.)	From 1.1.1880 to 31.12.1906	L.M.T. of Chennai 5*h* 21*m* ahead of G.M.T.	0*h* +9*m*
	From 1.1.1907 to 31.8.1942	Same as I.S.T.	0*h* 0*m*
	From 1.9.42 to 14.10.45	Same as Bengal Time	– 1*h* 0*m*
	From 15.10.45	Same as I.S.T.	0*h* 0*m*
Bengal Time relates to L.M.T. of 97° 30' E. Meridian			

East Pakistan observed Bengal time for civil purposes and Pakistan standard time, same as I.S.T. for Railways and Postal work etc. upto 30.9.1951. From 1.10.51 Bangladesh (former East Pakistan) Standard Time is 30*m* more than I.S.T. and Pakistan (former West Pakistan) standard time is 30*m* less than I.S.T.

Sayana Vyatipata and Vaidhriti Yoga, 2019

The ancient Indian astronomers used two kinds of aspect of the Sun and the Moon *viz.*, *Vyatipata* aspects, when the sum of the *tropical longitude* of the Sun and the Moon amounts to 180° and the *Vaidhriti* aspect when it amounts to 360°. These aspects treated as special *Yoga* are shown below.

Vyatipata	Vaidhriti	Vyatipata	Vaidhriti	Vyatipata	Vaidhriti
d h m	*d h m*	*d h m*	*d h m*	*d h m*	*d h m*
Jan. 3 23 00	Jan. 17 11 57	May 11 11 23	May 23 19 07	Sep. 15 19 15	Sep. 28 08 11
Jan. 28 27 45	Feb. 11 21 01	Jun. 5 23 42	Jun. 17 28 25	Oct. 10 23 39	Oct. 23 24 49
Feb. 23 14 00	Mar. 8 25 42	Jul. 1 14 59	Jul. 13 13 46	Nov. 4 28 04	Nov. 18 11 12
Mar. 21 06 46	Apr. 3 06 36	Jul. 26 29 11	Aug. 7 23 19	Nov. 30 11 08	Dec. 13 20 17
Apr. 15 23 10	Apr. 28 12 03	Aug. 21 14 00	Sep. 2 13 26	Dec. 25 20 57	Jan. 8 07 19 (2020)

Beginning Dates of Lunar months in 2019A.D.

Lunar month		Lunar Month begins from	Lunar month		Lunar Month begins from
Sukladi (Sudi)	*Krishnadi (Vadi)*		*Sukladi (Sudi)*	*Krishnadi (Vadi)*	
MUKHYAMANA	GAUNAMANA		MUKHYAMANA	GAUNAMANA	
Maharastra, Gujarat, Andhra Pradesh, Karnataka & W.B.	*U. P., Bihar, M. P., Orissa, Rajasthan & N. W. India*		*Maharastra, Gujarat, Andhra Pradesh, Karnataka & W.B.*	*U. P., Bihar, M. P., Orissa, Rajasthan & N. W. India*	
		2019			2019
		d h m			*d h m*
Pausa (Sukla)	Pausa (Sudi)	Jan. 6 06 58	Asadha (Sukla)	Asadha (Sudi)	Jul. 2 24 46
Pausa (Krishna)	Magha (Vadi)	Jan. 21 10 36	Asadha (Krishna)	Sravana (Vadi)	Jul. 16 27 08
Magha (Sukla)	Magha (Sudi)	Feb. 4 26 34	Sravana (Sukla)	Sravana (Sudi)	Aug. 1 08 42
Magha (Krishna)	Phalguna (Vadi)	Feb. 19 21 24	Sravana (Krishna)	Bhadrapada (Vadi)	Aug. 15 17 59
Phalguna (Sukla)	Phalguna (Sudi)	Mar. 6 21 34	Bhadrapada (Sukla)	Bhadrapada (Sudi)	Aug. 30 16 07
Phalguna (Krishna)	Chaitra (Vadi)	Mar. 21 07 13	Bhadrapada (Krishna)	Asvina (Vadi)	Sep. 14 10 03
Chaitra (Sukla)	Chaitra (Sudi)	Apr. 5 14 20	Asvina (Sukla)	Asvina (Sudi)	Sep. 28 23 56
Chaitra (Krishna)	Vaisakha (Vadi)	Apr. 19 16 42	Asvina (Krishna)	Kartika (Vadi)	Oct. 13 26 38
Vaisakha (Sukla)	Vaisakha (Sudi)	May 4 28 16	Kartika (Sukla)	Kartika (Sudi)	Oct. 28 09 08
Vaisakha (Krishna)	Jyaistha (Vadi)	May 18 26 41	Kartika (Krishna)	Margasirsa (Vadi)	Nov. 12 19 04
Jyaistha (Sukla)	Jyaistha (Sudi)	Jun. 3 15 32	Margasirsa (Sukla)	Margasirsa (Sudi)	Nov. 26 20 36
Jyaistha (Krishna)	Asadha (Vadi)	Jun. 17 14 01	Margasirsa(Krishna)	Pausa (Vadi)	Dec. 12 10 42
			Pausa (Sukla)	Pausa (Sudi)	Dec. 26 10 43
			Pausa (Krishna)	Magha (Vadi)	Jan. 10 24 51 (2020)

Phases of the Moon, 2019 (in I.S.T.)

Lunation	New Moon	First Quarter	Full Moon	Last Quarter
	d h m	*d h m*	*d h m*	*d h m*
1189	Jan. 6 06 58	Jan. 14 12 16	Jan. 21 10 36	Jan. 27 26 40
1190	Feb. 4 26 34	Feb. 12 27 56	Feb. 19 21 24	Feb. 26 16 58
1191	Mar. 6 21 34	Mar. 14 15 57	Mar. 21 07 13	Mar. 28 09 40
1192	Apr. 5 14 20	Apr. 12 24 36	Apr. 19 16 42	Apr. 26 27 48
1193	May 4 28 16	May 12 06 42	May 18 26 41	May 26 22 04
1194	Jun. 3 15 32	Jun. 10 11 29	Jun. 17 14 01	Jun. 25 10 16
1195	Jul. 2 24 46	Jul. 9 16 25	Jul. 16 27 08	Jul. 25 06 48
1196	Aug. 1 08 42	Aug. 7 23 01	Aug. 15 17 59	Aug. 23 20 26
1197	Aug. 30 16 07	Sep. 6 08 40	Sep. 14 10 03	Sep. 22 08 11
1198	Sep. 28 23 56	Oct. 5 22 17	Oct. 13 26 38	Oct. 21 18 09
1199	Oct. 28 09 08	Nov. 4 15 53	Nov. 12 19 04	Nov. 19 26 41
1200	Nov. 26 20 36	Dec. 4 12 28	Dec. 12 10 42	Dec. 19 10 27
1201	Dec. 26 10 43	—	—	—

Equinoxes and Solstices, 2019

		d	*h*	*m*			*d*	*h*	*m*
Sun at Perigee	Jan.	3	10	53	Sun at Apogee	Jul.	4	27	43
Vernal Equinox	Mar.	20	27	28	Autumnal Equinox	Sep.	23	13	20
Summer Solstice	Jun.	21	21	24	Winter Solstice	Dec.	22	09	49

Beginning Dates of Islamic Calendar, 2019

The *beginning* dates of the different months of the Islamic Calendar for the year 2019 determined on the basis of the first visibility of the lunar crescent after the New Moon day calculated for the Central Station of India ($82\frac{1}{2}$° E. Long.) are as follows.

The months of the Islamic Calendar actually begin from the sunset times of preceding day but in practice the months are taken to begin from *the next day.*

1440 Hejira (2019 A.D.)		1440 Hejira (2019 A.D.)		1441 Hejira (2019 A.D.)	
Jamadu'l Awwal	(30) Jan. 8	Shawwal	(30) Jun. 5	Safar	(29) Oct. 1
Jamadu's Sani	(30) Feb. 7	Z'ulquada	(29) Jul. 5	Rabiul Awwal	(30) Oct. 30
Rajab	(29) Mar. 9	Zulhijja	(29) Aug. 3	Rabius' Sani	(29) Nov. 29
Shaban	(30) Apr. 7	1441 Hejira (2019 A.D.)		Jamadu'l Awwal	(30) Dec. 28
Ramadan	(29) May 7	MUHARRAM	(30) Sep. 1	1441 Hejira (2020 A.D.)	
				Jamadu'S Sani	(30) Jan. 27

The date may vary by one day depending on the visibility of lunar crescent.

Beginning Dates of Vedic Solar Months & Indian Seasons, 2019

Month	Season	Date	Month	Season	Date
Tapasya (Kumbha)	WINTER (*Sisira*-2nd Month)	Jan. 21	Navasya (Simha)	RAINS (*Varsa*-2nd Month)	Jul. 23
Madhu (Mina)	SPRING (*Vasanta*-1st Month)	Feb. 20	Isa (Kanya)	AUTUMN (*Sarat*-1st Month)	Aug. 23
Madhava (Mesha)	SPRING (*Vasanta*-2nd Month)	Mar. 22	Urja (Tula)	AUTUMN (*Sarat*-2nd Month)	Sep. 23
Sukra (Vrisa)	SUMMER (*Grishma*-1st Month)	Apr. 21	Sahas (Vrischika)	EARLY WINTER (*Hemanta*-1st Month)	Oct. 23
Suci (Mithuna)	SUMMER (*Grishma*-2nd Month)	May 22	Sahasya (Dhanus)	EARLY WINTER (*Hemanta*-2nd Month)	Nov. 22
Navas (Karkata)	RAINS (*Varsa*-1st Month)	Jun. 21	Tapas (Makara)	WINTER (*Sisira*-1st Month)	Dec. 22

Dakshinayana from Jun. 21 & *Uttarayana* from Dec. 22.

Moon and Sun at Perigee and Apogee, 2019 (in I.S.T.)

Moon at Apogee (Farthest From the Earth)						Moon at Perigee (Nearest to the Earth)						Sun at Perigee & Apogee
Date				Horizontal Parallax	Semi-diameter	Date				Horizontal Parallax	Semi-diameter	
	d	*h*	*m*	' "	' "		*d*	*h*	*m*	' "	' "	**Sun**
												Perigee
												(Nearest to the Earth)
												Jan. 3, 10*h* 53*m*
												Semi-diameter = 16'15.94"
												Apogee
												(Farthest from the Earth)
												Jul. 4, 27*h* 43*m*
												Semi-diameter = 15'43.83"
Jan.	9	09	59	54 00	14 42	Jan.	21	25	30	61 15	16 41	**Mean Values**
Feb.	5	14	59	53 56	14 42	Feb.	19	14	33	61 26	16 44	Lunar parallax = 57'02.6"
Mar.	4	16	56	53 58	14 42	Mar.	19	25	18	60 55	16 36	Lunar Semi-diameter = 15'32.6"
Apr.	1	05	44	54 04	14 44	Apr.	16	27	35	60 07	16 23	Solar Semi-diameter = 16'01.2"
Apr.	28	23	50	54 15	14 47	May	13	27	23	59 23	16 11	Solar parallax = 8.79"
May	26	18	57	54 17	14 47	Jun.	7	28	45	59 27	16 12	
Jun.	23	13	20	54 13	14 46	Jul.	5	10	30	60 17	16 25	
Jul.	20	29	29	54 09	14 45	Aug.	2	12	41	61 00	16 37	
Aug.	17	16	19	53 59	14 42	Aug.	30	21	23	61 19	16 42	
Sep.	13	19	02	53 58	14 42	Sep.	28	07	54	61 17	16 42	
Oct.	10	23	59	54 03	14 43	Oct.	26	16	09	60 40	16 31	
Nov.	7	14	06	54 09	14 45	Nov.	23	13	11	59 47	16 17	
Dec.	5	09	38	54 13	14 46	Dec.	18	25	55	59 12	16 07	

SOLAR CALENDARS OF INDIA, 2019

Beginning dates of different solar months of India in 2019

Transit of Sun into *Nirayana Rasi* (I.S.T.)					Month	National Calendar	W.Bengal and Assam*	Orissa ** Punjab Haryana etc.	Tamil Nadu	Kerala †
	2019	*d*	*h*	*m*		1940 S.E.	Midnight Rule	Sunrise Rule	Sunset Rule	18 Ghatika Rule
Makara	Jan.	14	19	52	Magha	Jan. 21	Jan. 15	Jan. 14	Jan. 15	Jan. 15
Kumbha	Feb.	13	08	49	Phalguna	Feb. 20 1941 S.E.	Feb. 14	Feb. 13	Feb. 13	Feb. 13
Mina	Mar.	15	05	40	Chaitra	Mar. 22	Mar. 16	Mar. 14	Mar. 15	Mar. 15
Mesha	Apr.	14	14	09	Vaisakha	Apr. 21	Apr. 15	Apr. 14	Apr. 14	Apr. 14
Vrisha	May	15	11	01	Jyaistha	May 22	May 16	May 15	May 15	May 15
Mithuna	Jun.	15	17	38	Asadha	Jun. 22	Jun. 16	Jun. 15	Jun. 15	Jun. 16
Karkata	Jul.	16	28	34	Sravana	Jul. 23	Jul. 18	Jul. 16	Jul. 17	Jul. 17
Simha	Aug.	17	13	02	Bhadra	Aug. 23	Aug. 18	Aug. 17	Aug. 17	Aug. 17
Kanya	Sep.	17	13	03	Asvina	Sep. 23	Sep. 18	Sep. 17	Sep. 17	Sep. 17
Tula	Oct.	17	25	03	Kartika	Oct. 23	Oct. 19	Oct. 17	Oct. 18	Oct. 18
Vriscika	Nov.	16	24	51	Agrahayana	Nov. 22	Nov. 18	Nov. 16	Nov. 17	Nov. 17
Dhanus	Dec.	16	15	28	Pausa	Dec. 22	Dec. 17	Dec. 16	Dec. 16	Dec. 17
Makara(2020)	Jan.	14	26	08	Magha	Jan. 21	Jan. 16	Jan. 14	Jan. 15	Jan. 15

* In Assam the month names are almost the same like Vaisakha, Jyaistha etc. but have different spelling and pronounciation *e.g.* Bohag, Jeth, etc.

** In Orissa although the beginning of months are shown according to sunrise rule but actually the months start from the next day according to local custom. Month names are also mentioned in Orissa as Mesha, Vrisha etc. as well as Vaisakha, Jyaistha etc.

† In Kerala month names are also mentioned as Mesha, Vrishava etc. along with Medam, Edavan etc.

In determining the beginning of solar months, sunrise rule is followed in Orissa, Punjab, Haryana etc. *(day of transit of Sun)*, 18 ghatika rule in Kerala, sunset rule in Tamil Nadu and midnight rule in West Bengal.

Beginning of Eras, 2019

ERA	CRITERIA	YEAR	BEGINS
Christian (English)	Fixed	2019	January 01
Kaliyuga Era	(Nirayana—Mean Meshadi elapsed)	5120	April 14
Nimbarkabda	(Lunar Kartika S 15)	5115	November 12
Buddha Nirvana	(Lunar Vaisakha S 15)	2563	May 18
Mahavira Nirvana	(Lunar Kartika S 1)	2546	October 29
Vikram Samvat	(Solar—Punjab & Delhi)	2076	April 14
Vikram Samvat	(Lunar Chaitra S 1)	2076	April 06
Vikram Samvat	(Lunar Kartika S 1)	2076	October 29
Saka Era	(Lunar Chaitra S 1)	1941	April 06
Saka Era	(Solar)	1941	April 14
Saka Era of National Calendar	**(Vernal Equinox-Chaitra 1)**	**1941**	**March 22**
Hejira (Islamic New Year)	(1 Muharram)	1441	September 01
Amli San	(Lunar Bhadra S 12)	1427	September 10
Fusli San	(Lunar Bhadra K 1)	1427	September 15
Bengali & Assamese New Year	(Solar-Vaisakhadi)	1426	April 15
Yazdejardi Era (Parsi New Year)	(1 Farvardin) (Shahenshahi)	1389	August 17
Kollam Era	(Solar-Simhadi)	1195	August 17
Byzantine Era	(Fixed)	7528	September 14
Year of Julian Period	(Fixed)	6732	January 14
Jewish New Year	(1 Tishri)	5780	September 30
Chinese Year	(Ding-hai)	4656	February 04
Roman (A.U.C.)	(Fixed)	2772	January 14
Nabonassar (Babylon)	(Fixed)	2768	April 21
Japanese Year	(Fixed)	2679	January 01
Grecian (Seleucidae)	(Fixed)	2331	Sept. 14 or Oct. 14
Jovian Year *(Barhaspatya Varsa)*	Entry of Mean Jupiter into different Nirayana Rasi	47 Pramadin	June 05 (N. Indian Usage)
(60-year cycle of Jupiter)	(Lunar Chaitradi)	33 Vikarin	April 06 (S.Indian usage)
(60-year cycle of Jupiter)	(Solar)		April 14 "
Vedanga Jyotisha Year *(388th cycle)*	(Lunar Magha Sukladi)	5 Idavatsara	February 05

* 5 year cycle of Vedanga Jyotish year is : (1) Samvatsara (2) Parivatsara (3) Idavatsara (4) Anuvatsara and (5) Idvatsara according to *Paitamaha Siddhanta.*

N.B. : The dates of Kaliyuga Era and *Varhaspatya Varsa* have been calculated as per *Advance Ephemeris* by N. C. Lahiri.

Perpetual Calendar

(Based on *The Tables of the Sun* by N. C. Lahiri)

Century	Julian Day Number	Week day Index	Century	Julian Day Number	Week day Index	Century	Julian Day Number	Week day Index	Century	Julian Day Number	Week day Index
A.D.			A.D.			A.D.			A.D.		
J	*d*		J	*d*		J	*d*		J	*d*	
−3200	552258	1	−1800	1063608	1	−400	1574958	1	1000	2086308	1
−3100	588783	0	−1700	1100133	0	−300	1611483	0	1100	2122833	0
−3000	625308	6	−1600	1136658	6	−200	1648008	6	1200	2159358	6
−2900	661833	5	−1500	1173183	5	−100	1684533	5	1300	2195883	5
−2800	698358	4	−1400	1209708	4	0	1721058	4	1400	2232408	4
−2700	734883	3	−1300	1246233	3	100	1757583	3	J 1500	2268933	3
−2600	771408	2	−1200	1282758	2	200	1794108	2	G		
−2500	807933	1	−1100	1319283	1	300	1830633	1	1500	2268923	0
−2400	844458	0	−1000	1355808	0	400	1867158	0	1600	2305448	6
−2300	880983	6	−900	1392333	6	500	1903683	6	1700	2341972	4
−2200	917508	5	−800	1428858	5	600	1940208	5	1800	2378496	2
−2100	954033	4	−700	1465383	4	700	1976733	4	1900	2415020	0
−2000	990558	3	−600	1501908	3	800	2013258	3	2000	2451545	6
−1900	1027083	2	−500	1538433	2	900	2049783	2	2100	2488069	4

J = Julian Calendar ; G = Gregorian Calendar

January 14, 2019 of Gregorian Calendar corresponds to January 1, 2019 of Julian Calendar.

Rules for finding Day of Week

The Weekday for any day of the year may be ascertained as follows :—

Rule :-Index for the century from the above table + Last two figures of the year + $\frac{1}{4}$ th of last two figures (ignoring the remainder) = Y

Y + index for the month + date = Total.

Divide the total by 7 and take the remainder which indicates the day of week, *viz.*

if the remainder is 0 it is Saturday, 1 Sunday, 2 Monday, 3 Tuesday, 4 Wednesday, 5 Thursday, 6 Friday.

INDEX FOR THE MONTH

January = 1 (0 for a leap year)	April = 0	July = 0	October = 1
February = 4 (3 for a leap year)	May = 2	August = 3	November = 4
March = 4	June = 5	September = 6	December = 6

The Julian Calendar was established in the Roman Empire by Julius Caesar in 46 B.C. by revising the previous local calendars of Rome. In 1582, Pope Gregory XIII revised the calendar and ordained that Friday, October 5 of that year was to be counted as Friday, October 15.

In Great Britain 3rd Sept. 1752, Thursday of Julian Calendar was designated as 14th September, 1752, Thursday of Gregorian Calandar as the error in the Calendar then accumulated to 11 days.

Example : 1 — **To find the weekday of February 18, 1486 *(Birthday of Lord Shri Shri Chaitanya),* of Julian Calendar.**

Index for the century 1400 of Julian Calendar is 4 from the above table. Index for the century is 4+last two figures of the year is 86+21 ($\frac{1}{4}$ th of 86)+4 (Index for month)+ 18(date)=133. Dividing by 7, the remainder is 0, which is **Saturday.**

Example : 2 — **To find the weekday of September 14, 1752 of Gregorian Calendar.**

Index for the century is 4 + last two figure of the year is 52 + 13 (1/4th of 52) + 6 (Index for the month) +14 (date)=89. Dividing by 7, the remainder is 5, which is **Thursday.**

Example : 3 — **To find the weekday of February 18, 1836. *(Birthday of Sri Ramakrishna)* of Gregorian Calendar.**

Index for the century (1800) = 2 + last 2 figure of the year = 36 + $\frac{1}{4}$ th of last two figures of 1836 = 9 = Y + Index for the month (February being leap year) +3 + date (18) = 68. Dividing by 7, the remainder is 5, which is Thursday. (According to Bengali Calendar the birthday is 6th Phalguna, 1242 B.S., **Wednesday** on Feb. 17, 1836 at 4 a.m. which is before sunrise. But according to Gregorian Calendar as the time is after midnight the date is Feb. 18, 1836 which is **Thursday**).

Example : 4 — **To find the weekday of January 1, 2019.** In a similar way the weekday of January 1, 2019 is found to be (6+19+4+1+1) = 31. Dividing by 7, the remainder is 3, which is **Tuesday.**

Maximum and Minimum Distance of Sun, Moon and Planets from the Earth

Planet	Maximum distance		Minimum distance		Planet	Maximum distance		Minimum distance	
	Miles	Kilometres	Miles	Kilometres		Miles	Kilometres	Miles	Kilometres
Sun	94600000	153400000	91500000	148400000	Jupiter	597000000	968000000	362000000	587000000
Moon	253000	410000	222000	360000	Saturn	1023000000	1659000000	773000000	1253000000
Mercury	136900000	222000000	49100000	79600000	Uranus	1946000000	3155000000	1594000000	2584000000
Venus	160900000	260900000	25700000	41700000	Neptune	2891000000	4690000000	2654000000	4303000000
Mars	247000000	400500000	34000000	55000000	Pluto	4506000000	7306000000	2605000000	4224000000

Duration of Daylight

The duration of twilight and daylight is determined according to the dates of four cardinal points *viz,* two equinoxes and two solstices. At equinoxes, the Sun's rays are perpendicular to the Equator. At solstices the Sun's rays are perpendicular either to the Tropic of Cancer $23\frac{1}{2}^0$ north of the equator or to the Tropic of Capricorn $23\frac{1}{2}^0$ south of the equator.

March 20-21 : On the day of *Vernal Equinox,* when the Sun's rays are perpendicular to the equator, the equator itself represents the daily path of the Sun, and consequently the two hemisphere are equally lighted and nights and days have the same duration at all latitude except at the Poles which are gazed by the Sun's rays for 24 hours. From 21st March onwards the length of daylight gradually increases in the Northern hemisphere and decreases in the Southern hemisphere. During 6 months' period from March 21 to Sept. 23, there is continuous daylight at the North Pole and continuous darkness at the South Pole.

June 21 : On the day of *Summer solstice,* when the Sun shines on the whole of Arctic Circle, the Suns's rays are perpendicular to the Tropic of Cancer $23\frac{1}{2}^0$ north of the equator. At that period duration of daylight at a place becomes longest for the year in the Northern hemisphere and duration of darkness is longest for the year in the Southern hemisphere.

September 22-23 : On the day of *Autumnal Equinox,* when the Sun's rays are perpendicular to the equator, the day and night again become equal at anywhere on the Earth's surface except at the Poles. During 6 months' period from Sept. 23 to March 21, there is continuous darkness at the North Pole and continuous daylight at the South Pole.

Dec. 21-22 : On the day of *Winter Solstice,* the Sun's rays are perpendicular to the Tropic of Capricorn $23\frac{1}{2}^0$ south of the equator. From the day of Winter Solstice when the North Pole is turned away from the Sun, the daylight gradually increases and the duration of night remain longer than day in the Northern hemisphere. In the Southern hemisphere duration of daylight gradually decreases but remain longer than night and finally day and night become equal on the Vernal Equinox day on March 20-21.

Daylight continues for 6 months at the North Pole from March 21 to September 23 and at that period darkness continues for 6 months at the South pole. Again from September 23 to March 21, darkness continues for 6 months at the North Pole and daylight for 6 months at the South Pole.

Duration of longest daylight or dark nights at different latitudes (North or South)

Latitude	Longest day or shortest night	Latitude	Longest day or shortest night
0° (Equator)	12 hours	67°.4	1 month
31°	14 hours	69°.8	2 months
49°	16 hours	78°.2	4 months
66°.5	24 hours	90° (Poles)	6 months

On the two equinox days the lengths of day and night are equal. But due to atmospheric refraction the Sun is seen to rise a few minutes earlier and to set a few minutes later than the calculated times and as a result the actual duration of the day is about 6 to 7 minutes longer than the calcualted times.

Nirayana Longitudes of Mean Sun at 5-30 a.m. I.S.T. and True Ayanamsa and Mean Ayanamsa, 2019 A.D.

Date	Nirayana Mean Sun	Mean Ayanamsa	Nutation in Long.	True Ayanamsa	Date	Nirayana Mean Sun	Mean Ayanamsa	Nutation in Long.	True Ayanamsa
	S ° ' "	° ' "	"	° ' "		S ° ' "	° ' "	"	° ' "
Jan. 1	8 13 54 51	24 07 21	−15	24 07 06	Jul. 10	2 20 10 48	24 07 48	−16	24 07 32
11	8 22 46 13	24 07 22	−14	24 07 08	20	3 00 02 10	24 07 48	−15	24 07 33
21	9 02 37 35	24 07 25	−14	24 07 10	30	3 09 53 32	24 07 50	−15	24 07 35
31	9 12 58 57	24 07 25	−14	24 07 11	Aug. 9	3 19 44 54	24 07 52	−16	24 07 36
Feb. 10	9 22 20 19	24 07 26	−14	24 07 12	19	3 29 36 15	24 07 53	−16	24 07 37
20	10 02 11 41	24 07 28	−14	24 07 14	29	4 09 26 38	24 07 54	−16	24 07 38
Mar. 2	10 12 03 03	24 07 30	−15	24 07 15	Sep. 8	4 19 17 59	24 07 55	−16	24 07 39
12	10 21 54 25	24 07 31	−16	24 07 15	18	4 29 09 21	24 07 57	−17	24 07 40
22	11 01 45 47	24 07 32	−16	24 07 16	28	5 09 00 43	24 07 58	−17	24 07 41
Apr. 1	11 11 37 08	24 07 33	−16	24 07 17	Oct. 8	5 18 42 05	24 07 59	−17	24 07 42
11	11 21 28 30	24 07 35	−17	24 07 18	18	5 28 43 27	24 08 01	−18	24 07 43
21	0 01 19 52	24 07 36	−17	24 07 19	28	6 08 34 49	24 08 02	−18	24 07 44
May 1	0 11 11 14	24 07 37	−17	24 07 20	Nov. 7	6 18 26 11	24 08 04	−18	24 07 46
11	0 21 02 36	24 07 39	−17	24 07 22	17	6 28 17 23	24 08 05	−18	24 07 47
21	1 00 53 58	24 07 40	−17	24 07 23	27	7 08 08 55	24 08 06	−18	24 07 48
31	1 10 45 20	24 07 41	−17	24 07 24	Dec. 7	7 18 00 17	24 08 08	−18	24 07 50
Jun. 10	1 20 36 42	24 07 43	−17	24 07 26	17	7 27 51 39	24 08 09	−17	24 07 52
20	2 00 28 04	24 07 44	−16	24 07 28	27	8 07 43 01	24 08 11	−17	24 07 54
30	2 10 19 26	24 07 46	−16	24 07 30	32	8 12 38 42	24 08 11	−16	24 07 55

Short method for finding the value of Nutation in long. according to *Nirayana* long. of True Rahu

Rahu S °	Rahu °	Corr. "
11	07	0
11	22	− 5
0	07	− 9
0	22	−12
1	07	−15
1	22	−16
2	07	−17
2	22	−16
3	07	−15
3	22	−12
4	07	− 9
4	22	− 5
5	07	0
5	22	+ 5
6	07	+ 9
6	22	+12
7	07	+15
7	22	+16
8	07	+17
8	22	+16
9	07	+15
9	22	+12
10	07	+ 9
10	22	+ 5
11	07	0

Daily motion of Mean Sun = 0° 59' 08.19" and Mean Rahu = (−)3' 10.7708"

Mean Ayanamsa for any date in 2019 = 24° 06' 21.00" + *precession* in longitude from 2019.0 to date.

True Ayanamsa = Mean Ayanamsa − *nutation* in longitude.

True Ayanamsa on Jan. 1, 2019 = 24°07'21.00"−15.08" = 24°07'05.52"

Miscellaneous Astronomical and Geographical Data

Figure of the Earth

Total area of the Earth	=	510 million sq. km
Land Surface (29.2%)	=	149 million sq. km
Water Surface (70.8%)	=	361 million sq. km
Equatorial circumference	=	40, 077 km = 24902.7 miles
Equatorial diameter	=	12, 756.8 km = 7926.72 miles
Equatorial radius	=	6, 378.140 km = 3963.20 miles
Polar diameter	=	12, 713.8 km = 7900 miles
Polar radius	=	6356,755 km = 3949.91 miles
Mass of the Earth	=	5.9742×10^{24} kg
Mass of the Moon	=	7.3483×10^{22} kg
Mass of the Sun	=	1.9891×10^{30} kg
Diameter of the Sun	=	1,392,530 km
Diameter of the Moon	=	3,476 km

Plane of our galaxy : Ascending Node = 8^s 6° 7'; Inclination = 60° 11'

Plane of galaxy from Pole (1950) $\alpha = 12^h\ 49.0^m$; δ = +27° 24'

Centre of our galaxy : Long. $8^S2°$; Lat. = −6°, Light years = 26000

Astronomical Unit = 149, 597, 870 km. (The average distance between the Earth and the Sun).

Distance between each degree of longitude at the equator is 110 km (= 68 miles) approximately.

Conversion Formula

Equations for converting Right Ascension and Declination to Geocentric Longitude and Latitude.

$$\text{Geocentric Longitude} = \tan\lambda = \frac{\sin\alpha\cos\varepsilon + \tan\delta\sin\varepsilon}{\cos\alpha}$$

$$\text{Geocentric Latitude} = \sin\beta = \sin\delta\cos\varepsilon - \cos\delta\sin\varepsilon\sin\alpha$$
$$= -\cos\delta\sin\varepsilon\sin\alpha + \sin\delta\cos\varepsilon$$

Where α = Right Ascension ; δ = Declination; ε = True obliquity of the ecliptic.

Elements of the Planetary Orbits at 0^h E.T. or 5-29.0 a.m. I.S.T. on 1st January, 2019

(On Sidereal or *Nirayana basis)*

The elements of Sun, Moon and Moon's Node are based on *Indian Astronomical Ephemeris* while those of Mercury to Pluto are obtained from Heliocentric Osculating Orbital Elements.

	Mean Longitude				Perigee or Perihelion				Ascending Node				Inclination of Orbit			Eccentricity *(=e)*
	s	°	'	"	s	°	'	"	s	°	'	"	°	'	"	
Sun	8	13	54	51	8	19	08	13			—			—		0.01664
Moon	0	23	08	20	0	28	42	21	0	23	37	06	5	08	43	0.05490
Mercury	8	00	53	59	1	23	49	53	0	24	27	17	6	55	10	0.20565
Venus	11	27	25	46	7	16	11	11	1	22	43	42	3	43	05	0.00678
Mars	11	13	59	36	10	12	24	04	0	25	30	45	1	50	59	0.09355
Jupiter	6	16	04	14	11	24	27	39	2	16	24	05	1	17	14	0.04904
Saturn	7	12	23	10	2	05	10	52	3	00	05	50	3	00	24	0.05676
Uranus	3	15	33	08	5	06	05	51	1	19	53	03	0	46	56	0.04499
Neptune	3	17	12	50	7	55	22	18	3	18	02	10	1	45	24	0.02801
Pluto	4	04	26	38	6	25	24	07	3	23	13	15	16	53	15	0.26648

The above elements are referred to the mean ecliptic and equinox of date.

Various Astronomicals Information

	Sidereal Period	Mean Synodic Period	Mean daily motion			Mean distance from Sun (compared to Earth)		
						Astronomical	Kilometres	Miles
	days(years)	days	°	'	"			
Moon	27.3216615	29.531	13	10	35.0	0.00257		
Mercury	87.969256	115.878	4	05	32.4	0.38710	57900000	36000000
Venus	224.70080	583.921	1	36	07.7	0.72333	108200000	67200000
Earth	365.25636	—	0	59	08.2	1.00000	149600000	93000000
Mars	686.97982(1.9)	779.936	0	31	26.5	1.52369	227900000	141600000
Jupiter	4332.589(11.86)	398.884	0	04	59.1	5.20280	778300000	483600000
Saturn	10759.23(29.46)	378.092	0	02	01.9	9.53884	1427000000	886700000
Uranus	30688.45(84.02)	369.656	0	00	42.0	19.18172	2869000000	1782700000
Neptune	60181.3(164.77)	367.487	0	00	21.5	30.05824	4498000000	2794900000
Pluto	90737.2(248.42)	366.733	0	00	14.1	39.42043	5900000000	3666100000
Rahu	6793.470(18.60)	346.620	0	03	10.8	—	—	—
Moon's Perigee	3232.600(8.85)	411.785	0	06	40.9	—	—	—

Miscellaneous Astronomical Data

Ayanamsa on Jan. 1, 2018 : *True* = 24° 06' 19" *Mean* = 24° 06' 31" Nutation in longitude = –11.56"
Ayanamsa on Jan. 1, 2019 : *True* = 24° 07' 06" *Mean* = 24° 07' 21" Nutation in longitude = –15.08"
Ayanamsa on Jan. 1, 2020 : *True* = 24° 07' 55" *Mean* = 24° 08' 11" Nutation in longitude = –16.49"
Obliquity of the ecliptic on Jan. 1, 2019, *True* = 23° *26* 07.79" ; *Mean* = 23° *26* 12.50"; Nutation in obliquity = –4.71"
JULIAN DAY NUMBER (elapsed at Jan. 1, 2019, Greenwich Mean Noon) = 24,58,484 (completed)
'KALIYUGA' DAY NUMBER (elapsed at Jan. 1, 2019, Ujjain Midnight) = 18,70,019 (completed)

Mean Length of the Tropical year (equinox to equinox)	= 365.242 190*d*	= 365*d* 5*h* 48*m* 45.2*s*
Sidereal year (fixed star to fixed star)	= 365.256363*d*	= 365*d* 6*h* 9*m* 9.8*s*
Anomalistic year (perigee to perigee)	= 365.259636*d*	= 365*d* 6*h* 13*m* 52.6*s*
Eclipse year (node to node)	= 346.620078*d*	= 346*d* 14*h* 52*m* 54.8*s*
Mean Length of the Synodic lunar month (new-moon to new-moon)	= 29.530589*d*	= 29*d* 12*h* 44*m* 02.9*s*
Tropical month (equinox to equinox)	= 27.321 582*d*	= 27*d* 7*h* 43*m* 04.7*s*
Sidereal month (fixed star to fixed star)	= 27.321 662*d*	= 27*d* 7*h* 43*m* 11.6*s*
Anomalistic month (perigee to perigee)	= 27.554 550*d*	= 27*d* 13*h* 18*m* 33.1*s*
Draconic month (node to node)	= 27.212 221*d*	= 27*d* 5*h* 5*m* 35.9*s*

Mean Length of the Day : 1 mean solar day = 1.002 737 909 35 mean sidereal days = 24*h* 03*m* 56.555 37*s* of mean sidereal time.
1 mean sidereal day = 0.997 269 566 33 mean solar days = 23*h* 56*m* 04.090 53*s* of mean solar time.
Sidereal rotation period of the Earth = 23*h* 56*m* 04.999*s* mean solar time
Lunar day between the risings of the Moon = 24*h* 48*m* 45.838*s*
Mean duration of *tithi* = 23*h* 37*m* 28.096*s* Mean duration of *nakshatra* = 24*h* 17*m* 9.317*s*
Duration of tithi varies from 26*h* 47*m* to 19*h* 59*m*
Speed of the Earth moving around the Sun = 29.79 km. or 18.51 miles per sec. or roughly 66,600 miles per hour
Time to reach light on Earth from Sun is about 8.3 minutes and from Moon is about 1.3 seconds
Solar Parallax = 8.794148" ; Speed of light per sec. = 3,00,000 km (approx) 1,86,000 miles (approx) or 299,792.458 km in vacuous.
Solar motion = 20.0 km. or 12.4 miles per sec.
*Mean distance of Moon from the Earth = 384400 km. = 238856 miles (1 km. = 0.621372 miles)
Mean distance of Sun from the Earth is 930 lakh miles or 149.6 million km.

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
			h m s	20 Nakshatra s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			7/21 naks. s ° ′ ″
1 Tu	1	11	18 42 31	8 16 08 19	23 S 02	6 18 15 07	5 N 05	10 S 42	8 08	15	26	3 02 45 44
2 W	2	12	18 46 28	8 17 09 29	22 57	7 01 07 42	4 38	14 34	9 07	16	27	3 02 43 28
3 Th	3	13	18 50 25	8 18 10 39	22 52	7 13 46 21	3 59	17 41	9 45	17	28	3 02 41 06
4 F	4	14	18 54 21	8 19 11 50	22 46	7 26 12 37	3 08	19 57	10 35	18	29	3 02 38 57
5 St	5	15	18 58 18	8 20 13 01	22 40	8 08 27 54	2 10	21 15	11 25	19	30	3 02 37 20
6 ♋	6	16	19 02 14	8 21 14 11	22 33	8♂20 33 44	1 06	21 32	12 14	20	—	3 02 36 21
7 M	7	17	19 06 11	8 22 15 22	22 26	9 02 31 40	0 N 00	20 49	13 03	21	1	3 02 36 02
8 Tu	8	18	19 10 07	8 23 16 32	22 18	9 14 23 35	1 S 05	19 11	13 51	22	2	3 02 36 16
9 W	9	19	19 14 04	8 23 17 43	22 10	9 26 11 44	2 07	16 44	14 36	23	3	3 02 36 55
10 Th	10	20	19 18 01	8 25 18 53	22 02	10 07 58 50	3 04	13 36	15 20	—	4	3 02 37 43
11 F	11	21	19 21 57	8n26 20 02	21 53	10 19 48 09	3 54	9 55	16 04	24	5	3 02 38 32
12 St	12	22	19 25 54	8 27 21 11	21 43	11 01 43 26	4 33	5 50	16 45	25	6	3 02 39 10
13 ♋	13	23	19 29 50	8 28 22 19	21 34	11 13 48 55	5 01	1 S 28	17 32	26	7	3 02 39 34
14 M	14	24	19 33 47	8 29 23 27	21 23	11 26 08 59	5 16	3 N 02	18 11	27	8	3 02 39 44
15 Tu	15	25	19 37 43	9 00 24 34	21 13	0 08 48 07	5 16	7 31	18 58	1	9	3 02 39 43
16 W	16	26	19 41 40	9 01 25 41	21 02	0 21 50 13	5 01	11 48	19 45	2	10	3 02 39 38
17 Th	17	27	19 45 36	9 02 26 47	20 50	1 05 18 25	4 28	15 39	20 40	3	11	3 02 39 35
18 F	18	28	19 49 33	9 03 27 52	20 38	1 19 14 09	3 39	18 46	21 36	4	12	3 02 39 38
19 St	19	29	19 53 30	9 04 28 56	20 26	2 03 36 35	2 35	20 50	22 39	5	13	3 02 39 48
20 ♋	20	30	19 57 26	9 05 29 59	20 14	2 18 12 13	1 S 19	21 33	23 42	6	14	3 02 40 00
21 M	21	1	20 01 23	9 06 31 02	20 01	3♂03 24 49	0 N 04	20 43	—	8	15	3 02 40 07
22 Tu	22	2	20 05 19	9 07 32 04	19 47	3 18 35 52	1 27	18 24	0 46	9	16	3 02 40 02
23 W	23	3	20 09 16	9 08 33 06	19 34	4 03 45 46	2 45	14 47	1 47	10	18	3 02 39 39
24 Th	24	4	20 13 12	9n09 34 07	19 20	4 18 45 13	3 49	10 15	2 43	11	19	3 02 38 59
25 F	25	5	20 17 09	9 10 35 07	19 05	5 03 26 38	4 38	5 13	3 37	12	20	3 02 38 08
26 St	26	6	20 21 05	9 11 36 07	18 50	5 17 44 51	5 07	0 N 02	4 29	13	21	3 02 37 15
27 ♋	27	7	20 25 02	9 12 37 06	18 35	6 01 37 31	5 18	5 S 01	5 17	14	22	3 02 36 36
28 M	28	8	20 28 59	9 13 38 05	18 20	6 15 04 42	5 10	9 39	6 06	15	23	3 02 36 22
29 Tu	29	9	20 32 55	9 14 39 03	18 04	6 28 08 13	4 47	13 42	6 54	16	24	3 02 36 40
30 W	30	10	20 36 52	9 15 40 01	17 48	7 10 51 05	4 10	17 02	7 43	17	25	3 02 37 30
31 Th	31	11	20 40 48	9 16 40 57	17 31	7 23 16 49	3 N 22	19 S 29	8 32	18	26	3 02 38 43

Lunar Pausa Sukladi (Sudi) begins from January 6, 6h 58m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	12 03 18	10 53	8 47	17 18	9 59	12 06	19 03	16 19	6 16	17 03	6 42	17 25
3	12 04 18	10 58	8 47	17 15	9 53	11 59	18 55	16 11	6 17	17 05	6 42	17 27
5	12 05 12	11 03	8 47	17 12	9 46	11 52	18 47	16 03	6 17	17 06	6 43	17 28
7	12 06 06	11 08	8 47	17 09	9 40	11 46	18 39	15 56	6 18	17 07	6 43	17 29
9	12 06 54	11 14	8 48	17 06	9 34	11 39	18 31	15 48	6 18	17 09	6 43	17 31
11	12 07 42	11 19	8 49	17 03	9 28	11 32	18 23	15 40	6 18	17 10	6 44	17 32
13	12 08 30	11 25	8 49	17 00	9 22	11 25	18 15	15 33	6 19	17 11	6 44	17 34
15	12 09 12	11 31	8 50	17 00	9 16	11 18	18 08	15 25	6 19	17 13	6 44	17 35
17	12 09 54	11 37	8 51	16 54	9 10	11 11	18 00	15 17	6 19	17 14	6 44	17 37
19	12 10 36	11 43	8 52	16 51	9 03	11 04	17 52	15 10	6 19	17 16	6 44	17 38
21	12 11 12	11 49	8 54	16 48	8 57	10 58	17 44	15 02	6 18	17 17	6 43	17 39
23	12 11 42	11 55	8 55	16 45	8 51	10 51	17 36	14 54	6 18	17 19	6 43	17 41
25	12 12 12	12 01	8 57	16 42	8 45	10 44	17 29	14 47	6 18	17 20	6 43	17 42
27	12 12 36	12 07	8 58	16 39	8 38	10 37	17 21	14 39	6 17	17 21	6 42	17 44
29	12 13 00	12 14	9 00	16 36	8 32	10 30	17 13	14 31	6 17	17 23	6 41	17 45
31	12 13 24	12 20	9 02	16 34	8 26	10 23	17 06	14 24	6 16	17 24	6 41	17 46

Sun enters : Makara (Sidereal) Jan, 14th, 19*h* 52*m*. *Trop. Aquarius* (♒) Jan. 20th, 14*h* 30*m*

New Moon : *6th, 6h 58m* **First Quarter : 14th, 12*h* 16*m***

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.									
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)	
	18 naks.	16 naks.	26 naks.	18 naks.	20 naks.	*1 naks.*	24 naks.	20 naks.	*8/21naks*	
	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	
1	7 n 29 44	6 29 23	11 05 49	7 17 39	8 17 16	0R04 30	10 19 58	8 26 28	3 03 27	1
2	8 01 12	7 00 22	11 06 29	7 17 52	8♂17 23	0 04 30	10n19 59	8 26 30	3 03 24	2
3	8 02 41	7 01 21	11 07 10	7 18 04	8 17 30	0 04 29	10 20 00	8 26 32	3/2/03 21	3
4	8 04 10	7n02 21	11 07 50	7 18 17	8 17 37	0 04 29	10 20 02	8 26 34	3 03 17	4
5	8 05 39	7 03 22	11 08 30	7 18 29	8 17 44	0 04 29	10 20 03	8 26 36	3 03 14	5
6	8 07 09	7e 04 23	11 09 11	7 18 41	8 17 51	0D04 29	10 20 04	8n26 38	3 03 11	6
7	8 08 40	7 05 24	11 09 51	7 18 54	8 17 58	0 04 29	10 20 06	8 26 40	3 03 08	7
8	8 10 11	7 06 26	11 10 32	7 19 06	8 18 05	0 04 29	10 20 07	8 26 42	3 03 05	8
9	8 11 42	7 07 28	11 11 12	7 19 18	8 18 12	0 04 29	10 20 09	8 26 45	3 03 02	9
10	8 n 13s14	7 08 30	11 11 53	7 19 30	8 18 19	0 04 29	10 20 10	8 26 47	3 02 58	10
11	8 14 46	7 09 33	11 12 33	7 19 42	8 18 26	0 04 29	10 20 11	8♂26 49	3 02 55	11
12	8 16 19	7 10 36	11 13 14	7 19 54	8 18 33	0 04 30	10 20 13	8 26 51	3 02 52	12
13	8 17 52	7 11 39	11 13 55	7 20 06	8 18 40	0 04 30	10 20 15	8 26 53	3 02 49	13
14	8 19 25	7 12 43	11 14 35	7 20 18	8 18 47	0 04 30	10 20 16	8 26 55	3 02 46	14
15	8 20 59	7 13 47	11 15 16	7 20 30	8 18 54	0 04 31	10 20 18	8 26 57	3 02 42	15
16	8 22 34	7 14 51	11 15 56	7 20 42	8 19 01	0 04 31	10 20 19	8 26 59	3 02 39	16
17	8 24 09	7n15 56	11n16 37	7 20 53	8r19 08	0 04 32	10 20 21	8 27 01	3 02 36	17
18	8 n 25 44	7 17 00	11 17 18	7 21 05	8 19 15	0 04 32	10 20 23	8 27 04	3 02 33	18
19	8 27 20	7 18 06	11 17 58	7 21 17	8 19 22	0 04 33	10 20 24	8 27 05	3 02 30	19
20	8 28 57	7 19 11	11 18 39	7 21 28	8 19 29	0 04 33	10 20 26	8 21 07	3 02 27	20
21	9 00 34	7 20 17	11 19 19	7 21 39	8 19 36	0 04 34	10 20 28	8 27 09	3 02 23	21
22	9 02 12	7 21 22	11 20 00	7 21 51	8 19 43	0 04 35	10 20 30	8 17 11	3 02 20	22
23	9 03 50	7 22 28	11 20 41	7 22 02	8 19 50	0 04 36	10 20 31	8 27 13	3 02 17	23
24	9 05 29	7 23 35	11 21 21	7 22 13	8 19 57	0 04 37	10 20 33	8 27 15	3 02 14	24
25	9 07 08	7 24 41	11 22 02	7 22 24	8 20 03	0 04 37	10 20 35	8 27 17	3 02 11	25
26	9 n 08 48	7 25 48	11 22 43	7 22 35	8 20 10	0 03 38	10 20 37	8 27 19	3 02 07	26
27	9 10 29	7 26 55	11 23 23	7 22 46	8 20 17	0 04 39	10 20 39	8 27 21	3 02 04	27
28	9 12 10	7 28 02	11 24 04	7 22 57	8 20 24	0 04 40	10 20 41	8 27 23	3 02 01	28
29	9 13 52	7n 2909	11 24 45	7 23 07	8 20 30	0 04 42	10 20 43	8 27 25	3 01 58	29
30	9♂15 35	8 00 17	11 25 25	7 23 18	8 20 37	0 04 43	10 20 44	8 27 27	3 01 55	30
31	9 17 18	8 01 25	11 26 06	7 23 29	8 20 44	0 04 44	10 20 46	8 27 29	3 01 52	31

Lunar Pausa Krishnadi (Magha Vadi) begins from January 21, 10h 36 m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune		
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
1	0N 07	23 S10	3N26	15S19	0S 18	0S 18	0N 38	21S 34	0N29	22S 28	0 S 32	10N29	0 S 58	7S 09	1
3	0S 07	23 31	3 27	15 47	0 15	0N17	0 38	21 38	0 29	22 27	0 32	10 29	0 58	7 08	3
5	0 22	23 48	3 27	16 14	0 13	0 51	0 38	21 41	0 29	22 26	0 32	10 29	0 58	7 07	5
7	0 35	24 00	3 26	16 41	0 10	1 26	0 38	21 44	0 29	22 25	0 32	10 29	0 58	7 06	7
9	0 48	24 07	3 25	17 08	0 07	2 00	0 37	21 47	0 28	22 24	0 32	10 29	0 58	7 05	9
11	1 01	24 09	3 23	17 34	0 05	2 34	0 37	21 50	0 28	22 22	0 32	10 29	0 58	7 04	11
13	1 12	24 06	3 20	17 59	0S 03	3 09	0 37	21 53	0 28	22 21	0 32	10 29	0 58	7 03	13
15	1 23	23 57	3 17	18 23	0N 00	3 43	0 37	21 56	0 28	22 20	0 32	10 30	0 58	7 02	15
17	1 32	23 43	3 14	18 45	0 02	4 17	0 37	21 58	0 28	22 19	0 31	10 30	0 58	7 00	17
19	1 41	23 23	3 10	19 07	0 04	4 51	0 37	22 01	0 28	22 17	0 31	10 31	0 58	6 59	19
21	1 48	22 57	3 05	19 27	0 06	5 24	0 37	22 03	0 28	22 16	0 31	10 31	0 58	6 58	21
23	1 54	22 26	3 01	19 46	0 09	5 58	0 37	22 06	0 28	22 15	0 31	10 32	0 58	6 56	23
25	1 59	21 49	2 55	20 03	0 11	6 31	0 37	22 08	0 27	22 14	0 31	10 32	0 58	6 55	25
27	2 03	21 06	2 50	20 18	0 13	7 04	0 37	22 10	0 27	22 12	0 31	10 33	0 58	6 53	27
29	2 05	20 16	2 44	20 32	0 15	7 37	0 37	22 12	0 27	22 11	0 31	10 34	0 58	6 52	29
31	2S 05	19S 21	2N 38	20S44	0N17	8N09	0N37	22S14	0N27	22 S10	0 S 31	10N35	0 S 58	6S 50	31

1st Jan. : Rahu Decli.20°N 58'

1st Jan. Mean Ayanamsa : 24°07'20"

Full Moon : 21*st*, 10*h* 36*m*

Last Quarter : 27th, 26*h* 40*m*

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
			h m s	22 Nakshatra s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			7/21 naks. s ° ′ ″
1 F	32	12	20 44 45	9 17 41 54	17S 15	8 05 29 03	2 N 25	21 S 01	9 22	19	27	3 02 40 04
2 St	33	13	20 48 41	9 18 42 49	16 57	8 17 31 07	1 23	21 33	10 11	20	21	3 02 41 12
3 ♋	34	14	20 52 38	9 19 43 43	16 40	8 29 26 06	0 N 18	21 05	10 59	21	29	3 02 41 47
4 M	35	15	20 56 34	9 20 44 37	16 22	9♂11 16 30	0 S 47	19 41	11 48	—	30	3 02 41 31
5 Tu	36	16	21 00 31	9 21 45 29	16 04	9 23 04 44	1 50	17 26	12 33	22	1	3 02 40 13
6 W	37	17	21 04 28	9n22 46 20	15 46	10 04 52 48	2 49	14 27	13 18	23	—	3 02 37 53
7 Th	38	18	21 08 24	9 23 47 10	15 28	10 16 42 44	3 40	10 54	14 02	24	2	3 02 34 38
8 F	39	19	21 12 21	9 24 47 58	15 09	10 28 36 35	4 21	6 53	14 44	25	3	3 02 30 48
9 St	40	20	21 16 17	9 25 48 46	14 50	11 10 36 42	4 52	2 S 36	15 25	26	4	3 02 26 48
10 ♋	41	21	21 20 14	9 26 49 31	14 31	11 22 45 46	5 10	1 N 51	16 08	27	5	3 02 23 07
11 M	42	22	21 24 10	9 27 50 15	14 11	0 05 06 52	5 14	6 18	16 52	1	6	3 02 20 14
12 Tu	43	23	21 28 07	9 28 50 58	13 52	0 17 43 22	5 03	10 34	17 40	2	7	3 02 18 28
13 W	44	24	21 32 03	9 29 51 39	13 32	1 00 38 50	4 37	14 28	18 27	3	8	3 02 17 58
14 Th	45	25	21 36 00	10 00 52 18	13 11	1 13 56 35	3 55	17 47	19 22	4	9	3 02 18 36
15 F	46	26	21 39 57	10 01 52 56	12 51	1 27 39 14	2 59	20 12	20 19	5	10	3 02 19 57
16 St	47	27	21 43 57	10 02 53 32	12 30	2 11 48 02	1 51	21 28	21 19	6	11	3 02 21 24
17 ♋	48	28	21 47 50	10 03 54 06	12 10	2 26 22 05	0 S 33	21 20	22 23	7	12	3 02 22 18
18 M	49	29	21 51 46	10 04 54 38	11 49	3 11 17 43	0 N 49	19 42	23 25	8	14	3 02 22 00
19 Tu	50	30	21 55 43	10n05 55 08	11 27	3♂26 28 20	2 08	16 39	—	9	15	3 02 20 07
20 W	51	1	21 59 39	10 06 55 37	11 06	4 11 44 43	3 19	12 26	0 23	10	16	3 02 16 37
21 Th	52	2	22 03 36	10 07 56 05	10 45	4 26 56 27	4 15	7 27	1 22	12	7	3 02 11 47
22 F	53	3	22 07 32	10 08 56 31	10 23	5 11 53 24	4 52	2N05	2 15	13	18	3 02 06 14
23 St	54	4	22 11 29	10 09 56 56	10 01	5 26 27 33	5 10	35 15	3 08	14	19	3 02 00 43
24 ♋	55	5	22 15 26	10 10 57 19	9 39	6 10 33 55	5 08	8 14	3 58	15	20	3 01 56 02
25 M	56	6	22 19 22	10 11 57 41	9 17	6 24 10 48	4 48	12 39	4 48	16	22	3 01 52 46
26 Tu	57	7	22 23 19	10 12 58 02	8 54	7 07 19 21	4 14	16 18	5 39	17	23	3 01 51 12
27 W	58	8	22 27 15	10 13 58 21	8 32	7 20 02 45	3 28	19 03	6 28	18	—	3 01 51 12
28 Th	59	9	22 31 12	10 14 58 38	8 S 09	8 02 25 23	2 N 33	20 S 50	7 18	19	24	3 01 52 21

Lunar Magha Sukladi (Sudi) begins from February 4, 26h 34m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h .m	h m	h m	h m	h m	h m	h m	h m
1	12 13 30	12 23	9 02	16 32	8 22	10 20	17 02	14 20	6 16	17 25	6 40	17 47
3	12 13 48	12 29	9 04	16 29	8 16	10 13	16 54	14 12	6 15	17 26	6 40	17 48
5	12 13 54	12 35	9 06	16 26	8 09	10 06	16 46	14 05	6 14	17 27	6 39	17 50
7	12 14 06	12 41	9 08	16 24	8 03	9 59	16 39	13 57	6 13	17 28	6 38	17 51
9	12 14 12	12 47	9 10	16 21	7 57	9 52	16 31	13 50	6 12	17 30	6 37	17 52
11	12 14 12	12 53	9 12	16 18	7 50	9 45	16 23	13 42	6 11	17 31	6 35	17 53
13	12 14 12	12 58	9 14	16 15	7 43	9 38	16 16	13 34	6 10	17 32	6 34	17 55
15	12 14 06	13 03	9 16	16 13	7 37	9 31	16 08	13 27	6 09	17 33	6 33	17 56
17	12 14 00	13 08	9 18	16 10	7 30	9 24	16 01	13 19	6 07	17 34	6 32	17 57
19	12 13 54	13 12	9 20	16 07	7 24	9 17	15 53	13 12	6 06	17 35	6 30	17 58
21	12 13 42	13 15	9 23	16 04	7 17	9 10	15 45	13 04	6 04	17 36	6 29	17 59
23	12 13 24	13 17	9 25	16 02	7 10	9 03	15 38	12 56	6 03	17 37	6 27	18 00
25	12 13 06	13 18	9 27	15 59	7 03	8 56	15 30	12 49	6 02	17 38	6 26	18 01
27	12 12 48	13 17	9 29	15 56	6 57	8 48	15 23	12 41	6 00	17 39	6 24	18 02
28	12 12 36	13 16	9 30	15 55	6 53	8 45	15 19	12 37	5 59	17 40	6 23	18 02

Sun enters: Kumbha (Sidereal) Feb. 13th, 8*h* 49*m*. *Trop. Pisces* (♓): Feb. 18th, 28*h* 34*m*

New Moon : 4th, 26h 34m First Quarter : 12th, *27h56m*

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.								
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)
	22 naks.	19 naks.	27 naks.	18 naks.	20 naks.	1 naks.	25 naks.	21 naks.	*7/21 naks*
	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′
1	9 19 02	8 02 33	11 26 46	7 23 39	8 20 50	0 04 45	10 20 48	8 27 30	3 01 48
2	9 20 47	8 03 41	11 27 27	7 23 49	8 20 57	0 04 47	10 20 50	8 27 32	3 01 45
3	9n22 32	8 04 49	11 28 08	7 24 00	8 21 03	0 04 48	10 20 52	8 27 34	3 01 42
4	9 24 18	8 05 57	11 28 48	7 24 10	8 21 10	0 04 49	10 20 54	8 27 36	3 01 39
5	9 26 05	8 07 06	11n29 29	7 24 20	8 21 16	0 04 51	10 20 56	8 27 38	3 01 35
6	9 27 52	8 08 14	0 00 10	7 24 30	8 21 23	0 04 52	10 20 58	8 27 40	3 01 33
7	9 29 39	8 09 23	0 00 50	7 24 39	8 21 29	0 04 54	10 21 01	8 27 42	3 01 29
8	10 01 27	8 10 32	0 01 31	7 24 49	8 21 35	0 04 55	10 21 02	8 27 44	3 01 26
9	10 03 15	8 11 41	0 02 12	7 24 59	8 21 42	0 04 57	10 21 05	8 27 46	3 01 23
10	10n05 04	8n12 50	0 02 52	7 25 08	8 21 48	0 04 59	10 21 07	8 27 47	3 01 20
11	10 06 52	8 13 59	0 03 33	7 25 18	8 21 54	0 05 01	10 21 09	8 27 49	3 01 17
12	10r 08 41	8 15 09	0 04 13	7 25 27	8 22 00	0 05 02	10 21 11	8 27 51	3 01 13
13	10 10 29	8 16 18	0 04 54	7 25 36	8 22 06	0 05 04	10 21 13	8 27 53	3 01 10
14	10 12 17	8 17 28	0 05 34	7 25 45	8 22 13	0 05 06	10 21 15	8 27 55	3 01 07
15	10 14 04	8 18 38	0 06 15	7 25 54	8 22 19	0 05 08	10 21 18	8 27 56	3 01 04
16	10 15 51	8 19 47	0 06 56	7 26 03	8 22 25	0 05 10	10 21 20	8 27 58	3 01 01
17	10 17 35	8 20 57	0 07 36	7 26 11	8 22 30	0 05 12	10 21 22	8 28 00	3 00 58
18	10n19 19	8 22 07	0 08 17	7 26 20	8 22 36	0 05 14	10 21 24	8 28 01	3 00 54
19	10 21 00	8 23 17	0 08 57	7 26 28	8 22 42	0 05 16	10 21 26	8 28 03	3 00 51
20	10 22 38	8 24 28	0 09 38	7 26 37	8 22 48	0 05 18	10 21 29	8 28 05	3 00 48
21	10 24 13	8n25 38	0 10 18	7 26 44	8 22 53	0 05 20	10 21 31	8 28 06	3 00 45
22	10 25 44	8 26 48	0 10 58	7 26 53	8 22 59	0 05 23	10 21 33	8 28 08	3 00 42
23	10 27 11	8 27 59	0 11 39	7 27 01	8 23 05	0 05 25	10 21 35	8 28 10	3 00 38
24	10 28 33	8 29 09	0 12 19	7 27 08	8 23 10	0 05 27	10 21 37	8 28 11	3 00 35
25	10 29 50	9 00 20	0n13 00	7 27 16	8 23 16	0 05 29	10 21 40	8 28 13	3 00 32
26	11 01 00	9 01 31	0 13 40	7 27 23	8 23 21	0 05 32	10 21 42	8 28 14	3 00 29
27	11e 02 03	9 02 41	0 14 20	7 27 31	8 23 27	0 05 34	10 21 44	8 28 16	3 00 25
28	11n02 59	9 03 52	0 15 01	7 27 38	8 23 32	0 05 36	10 21 46	8 28 17	3 00 23

Lunar Magha Krishnadi (Phalguna Vadi) begins from February 19, 21h 24m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	2S 05	18S51	2N35	20S 49	0N17	8N25	0N37	22S15	0N27	22S09	0S 31	10N35	0 S 58	6S 49
3	2 02	17 47	2 28	20 58	0 19	8 58	0 37	22 17	0 27	22 08	0 31	10 36	0 58	6 48
5	1 58	16 37	2 21	21 04	0 21	9 29	0 37	22 19	0 27	22 06	0 31	10 37	0 58	6 46
7	1 52	15 21	2 14	21 09	0 23	10 01	0 37	22 21	0 27	22 05	0 31	10 39	0 58	6 45
9	1 43	14 00	2 07	21 11	0 25	10 32	0 37	22 22	0 27	22 03	0 31	10 40	0 58	6 43
11	1 32	12 33	2 00	21 12	0 26	11 03	0 37	22 24	0 27	22 02	0 31	10 41	0 58	6 41
13	1 18	11 02	1 52	21 10	0 28	11 33	0 37	22 25	0 27	22 01	0 31	10 42	0 58	6 40
15	1 02	9 27	1 45	21 05	0 29	12 33	0 37	22 26	0 26	21 59	0 31	10 44	0 58	6 38
17	0 42	7 49	1 37	20 59	0 31	12 33	0 37	22 28	0 26	21 58	0 30	10 45	0 58	6 36
19	0S 20	6 11	1 29	20 50	0 32	13 03	0 37	22 29	0 26	[illegible]	0 30	10 47	0 58	6 35
21	0N04	4 33	1 22	20 38	0 34	13 31	0 37	22 30	0 26	21 55	0 30	10 48	0 58	6 33
23	0 31	2 58	1 14	20 24	0 35	14 00	0 37	22 31	0 26	21 54	0 30	10 50	0 58	6 31
25	0 59	1 30	1 06	20 09	0 37	14 28	0 37	22 32	0 26	21 53	0 30	10 52	0 58	6 30
27	1 29	0S 10	0 58	19 51	0 38	14 55	0 37	22 33	0 26	21 51	0 30	10 53	0 58	6 28
28	1N43	0N26	0N54	19S41	0N 39	15N09	0N37	22S33	0N26	21S51	0S 30	10N54	0 S 58	6S 27

1st Feb. : Rahu Decli. 20°N 58'

1st Feb. Mean Ayanamsa : 24°07' 25"

Full Moon :19th, 21h 24m

Last Quarter :26th *16h 58m*

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
			h m s	24 Nakshatra s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			7/21 naks. s ° ′ ″
1 F	60	10	22 35 08	10 15 58 55	7 S 47	8 14 32 09	1 N 33	21 S 36	8 07	—	25	3 01 53 54
2 St	61	11	22 39 05	10 16 59 09	7 24	8 26 27 54	0 N 30	21 22	8 56	20	26	3 01 55 02
3 ☽	62	12	22 43 01	10 17 59 22	7 01	9 08 17 08	0 S 34	20 11	9 45	21	27	3 01 54 56
4 M	63	13	22 46 58	10 18 59 34	6 38	9 20 30 46	1 37	18 07	10 31	22	28	3 01 52 57
5 Tu	64	14	22 50 55	10n19 59 44	6 15	10 01 51 05	2 34	15 17	11 16	23	29	3 01 48 41
6 W	65	15	22 54 51	10 20 59 52	5 52	10♌13 41 38	3 26	11 49	11 59	24	30	3 01 42 07
7 Th	66	16	22 58 48	10 21 59 58	5 29	10 25 37 23	4 08	7 52	12 43	25	1	3 01 33 34
8 F	67	17	23 02 44	10 23 00 02	5 05	11 07 39 52	4 40	3 S 35	13 24	26	2	3 01 23 39
9 St	68	18	23 06 41	10 24 00 05	4 42	11 19 50 20	5 00	0 N 54	14 07	27	3	3 01 13 19
10 ☽	69	19	23 10 37	10 25 00 05	4 18	0 02 09 59	5 06	5 23	14 51	1	4	3 01 03 41
11 M	70	20	23 14 34	10 26 00 04	3 55	0 14 40 16	4 57	9 44	15 36	2	5	3 00 55 12
12 Tu	71	21	23 18 30	10 27 00 00	3 31	0 27 22 55	4 34	13 43	16 23	3	6	3 00 49 03
13 W	72	22	23 22 27	10 27 59 54	3 08	1 10 20 03	3 56	17 09	17 14	4	7	3 00 45 23
14 Th	73	23	23 26 24	10 28 59 46	2 44	1 23 34 07	3 05	19 47	18 09	5	8	3 00 43 57
15 F	74	24	23 30 20	10 29 59 35	2 20	2 07 07 30	2 03	21 23	19 06	6	9	3 00 44 06
16 St	75	25	23 34 17	11 00 59 23	1 57	2 21 02 08	0 S 52	21 43	20 05	7	10	3 00 44 47
17 ☽	76	26	23 38 13	11 01 59 58	1 33	3 05 18 37	0 N 24	20 40	21 05	8	11	3 00 44 48
18 M	77	27	23 42 10	11n02 58 51	1 09	3 19 55 40	1 41	18 13	22 05	9	12	3 00 43 07
19 Tu	78	28	23 46 06	11 03 58 31	0 45	4 04 49 22	2 51	14 31	23 02	10	13	3 00 39 00
20 W	79	29	23 50 03	11 04 58 10	0 S 22	4 19 53 01	3 51	9 51	—	11	14	3 00 32 17
21 Th	80	30	23 53 59	11 05 57 46	0 N 02	5♌04 57 37	4 34	4 N 34	23 58	12	15	3 00 23 23
22 F	81	1	23 57 56	11 06 57 20	0 26	5 19 53 16	4 58	0 S 56	0 51	13	17	3 00 13 11
23 St	82	2	0 01 53	11 07 56 52	0 49	6 04 40 52	5 02	6 16	1 43	14	18	3 00 02 49
24 ☽	83	3	0 05 49	11 08 56 23	1 13	6 18 43 37	4 47	11 08	2 35	15	19	2 29 53 27
25 M	84	4	0 09 46	11 09 55 52	1 37	7 02 27 50	4 16	15 14	3 27	16	20	2 29 46 01
26 Tu	85	5	0 13 42	11 10 55 18	2 00	7 15 43 04	3 31	18 26	4 18	17	21	2 29 40 59
27 W	86	6	0 17 39	11 11 54 44	2 24	7 28 31 28	2 38	20 37	5 10	18	22	2 29 38 20
28 Th	87	7	0 21 35	11 12 54 07	2 47	8 10 57 04	1 38	21 43	6 02	19	23	2 29 37 31
29 F	88	8	0 25 32	11 13 53 28	3 11	8 23 04 55	0 N 35	21 45	6 52	20	24	2 29 37 39
30 St	89	9	0 29 28	11 14 52 48	3 34	9 05 00 29	0 S 29	20 48	7 40	21	25	2 29 37 37
31 ☽	90	10	0 33 25	11n15 52 06	3N 57	9 16 49 10	1 S 30	18 S 56	8 28	22	—	2 29 36 21

Lunar Phalguna Sukladi (Sudi) begins from March 6, 21h 34m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	12 12 24	13 14	9 31	15 54	6 50	8 41	15 15	12 34	5 58	17 40	6 22	18 03
3	12 12 00	13 09	9 33	15 51	6 43	8 34	15 08	12 26	5 57	17 41	6 21	18 04
5	12 11 36	13 02	9 35	15 49	6 36	8 27	15 00	12 19	5 55	17 42	6 19	18 05
7	12 11 06	12 53	9 37	15 46	6 29	8 20	14 52	12 11	5 53	17 43	6 17	18 06
9	12 10 42	12 42	9 39	15 44	6 22	8 13	14 45	12 03	5 52	17 43	6 15	18 06
11	12 10 12	12 29	9 41	15 41	6 15	8 05	14 37	11 56	5 50	17 44	6 13	18 07
13	12 09 36	12 15	9 43	15 38	6 08	7 58	14 30	11 48	5 48	17 45	6 11	18 08
15	12 09 06	12 01	9 44	15 36	6 01	7 51	14 22	11 40	5 46	17 46	6 10	18 09
17	12 08 30	11 46	9 46	15 32	5 53	7 44	14 15	11 33	5 44	17 47	6 08	18 10
19	12 07 54	11 32	9 48	15 31	5 46	7 36	14 07	11 25	5 42	17 47	6 06	18 10
21	12 07 18	11 20	9 49	15 29	5 39	7 29	14 00	11 18	5 40	17 48	6 04	18 11
23	12 06 42	11 08	9 51	15 26	5 32	7 22	13 53	11 10	5 39	17 49	6 02	18 12
25	12 06 06	10 58	9 52	15 24	5 24	7 14	13 45	11 03	5 37	17 49	6 00	18 13
27	12 05 30	10 49	9 54	15 21	5 17	7 07	13 38	10 55	5 35	17 50	5 58	18 13
29	12 04 54	10 42	9 55	15 19	5 09	6 59	13 30	10 47	5 33	17 51	5 56	18 14
31	12 04 18	10 36	9 57	15 17	5 06	6 52	13 23	10 40	5 31	17 51	5 54	18 15

Sun enters : Mina (Sidereal) March 15th, *5h 40m.* ***Trop. Aries*** (♈): March 20th, *27h 28m*

New Moon : 6th, 21h 34m **First Quarter : 14th, *15h 57m***

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.																					
	Mercury ☿			Venus ♀			Mars ♂			Jupiter ♃			Saturn ♄			Uranus ♅			Neptune ♆			Pluto ♇			Rahu ☊ (Mean)		
	26 naks.			21 naks.			2 naks.			18 naks.			20 naks.			1 naks.			25 naks.			21 naks.			7/21naks.		
	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′
1	11	03	47	9	05	03	0	15	41	7	27	45	8	23	37	0	05	39	10	21	49	8	28	19	3	00	19
2	11	04	26	9	06	14	0	16	21	7	27	52	8	23	42	0	05	41	10	21	51	8	28	20	3	00	16
3	11	04	56	9	07	25	0	17	02	7	27	59	8	23	47	0	05	44	10	21	53	8	28	22	3	00	13
4	11	05	17	9	08	36	0	17	42	7	28	05	8	23	52	0	05	47	10	21	56	8	28	23	3	00	10
5	11	R05	29	9	n09	48	0	18	22	7	28	12	8	23	57	0	05	49	10	21	58	8	28	25	3	00	07
6	11	05	31	9	10	59	0	19	03	7	28	18	8	24	02	0	05	52	10	22	00	8	28	26	3	00	03
7	11	05	24	9	12	10	0	19	43	7	28	24	8	24	07	0	05	54	10	♂22	02	8	28	27	3	00	00
8	11	05	09	9	13	22	0	20	23	7	28	30	8	24	12	0	05	57	10	22	05	8	28	29	2	29	57
9	11	*s*	04	45	9	14	33	0	21	03	7	28	36	8	24	17	0	06	00	10	22	07	8	28	30	2	29	54
10	11	04	13	9	15	44	0	21	43	7	28	42	8	24	21	0	06	03	10	22	09	8	28	31	2	29	51
11	11	*n*	03	34	9	16	56	0	22	24	7	28	48	8	24	26	0	06	05	10	22	12	8	28	33	2	29	48
12	11	02	48	9	18	07	0	23	04	7	28	53	8	24	30	0	06	08	10	22	14	8	28	34	2	29	44
13	11	01	58	9	19	19	0	23	44	7	28	58	8	24	35	0	06	11	10	22	16	8	28	35	2	29	41
14	11	01	05	9	20	31	0	24	24	7	29	03	8	24	39	0	06	14	10	22	18	8	28	36	2	29	38
15	11	♃00	08	9	21	42	0	25	04	7	29	08	8	24	43	0	06	17	10	22	21	8	28	38	2	29	35
16	10	29	11	9	n22	54	0	25	44	7	29	13	8	24	47	0	06	20	10	22	23	8	28	39	2	29	32
17	10	28	14	9	24	06	0	n26	24	7	29	17	8	24	51	0	06	23	10	22	25	8	28	40	2	29	29
18	10	27	18	9	25	18	0	27	04	7	29	22	8	24	55	0	06	26	10	22	27	8	28	41	2	29	25
19	10	26	24	9	26	30	0	27	44	7	29	26	8	24	59	0	06	29	10	22	30	8	28	42	2	29	22
20	10	25	34	9	27	41	0	28	24	7	29	30	8	25	03	0	06	32	10	22	32	8	28	43	2	29	19
21	10	*r*	24	48	9	28	53	0	29	04	7	29	34	8	25	07	0	06	35	10	22	34	8	28	44	2	29	16
22	10	24	07	10	00	05	0	29	44	7	29	38	8	25	11	0	06	38	10	22	36	8	28	45	2	29	13
23	10	23	31	10	01	17	1	00	24	7	29	41	8	25	14	0	06	41	10	22	38	8	28	46	2	29	09
24	10	23	01	10	02	29	1	01	04	7	29	44	8	25	18	0	06	44	10	22	41	8	28	47	2	29	06
25	10	22	36	10	03	41	1	01	44	7	29	48	8	25	21	0	06	47	10	22	43	8	28	48	2	29	03
26	10	22	18	10	04	53	1	02	24	7	29	51	8	25	25	0	06	51	10	22	45	8	28	49	2	29	00
27	10	22	06	10	n06	06	1	03	03	7	29	53	8	25	28	0	06	54	10	22	47	8	28	50	2	28	57
28	10	D21	59	10	07	18	1	03	43	7	29	56	8	25	31	0	06	57	10	22	49	8	28	50	2	28	54
29	10	21	59	10	08	30	1	04	23	7	n29	59	8	25	34	0	07	00	10	22	52	8	28	51	2	28	50
30	10	22	04	10	09	42	1	05	03	8	00	01	8	25	37	0	07	03	10	22	54	8	28	52	2	28	47
31	10	22	15	10	10	54	1	05	42	8	00	03	8	25	40	0	07	07	10	22	56	8	28	53	2	28	44

Lunar Phalguna Krishnadi (Chaitra Vadi) begins from March 21, 7h 13m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	1 N58	0N 58	0N50	19 S30	0N39	15N22	0N 37	22S34	0N26	21S50	0 S 30	10N 55	0 S 58	6 S 26
3	2 26	1 51	0 42	19 07	0 41	15 49	0 37	22 35	0 26	21 49	0 30	10 57	0 58	6 24
5	2 51	2 28	0 35	18 43	0 42	16 15	0 38	22 35	0 26	21 48	0 30	10 59	0 58	6 22
7	3 12	2 45	0 27	18 16	0 43	16 40	0 38	22 36	0 26	21 46	0 30	11 01	0 58	6 21
9	3 28	2 44	0 20	17 47	0 44	17 05	0 38	22 37	0 25	21 45	0 30	11 03	0 58	6 19
11	3 37	2 23	0 12	17 15	0 45	17 30	0 38	22 37	0 25	21 44	0 30	11 05	0 58	6 17
13	3 37	1 46	0N05	16 42	0 46	17 53	0 38	22 38	0 25	21 43	0 30	11 07	0 58	6 15
15	3 30	0N 56	0S 02	16 07	0 47	18 17	0 38	22 38	0 25	21 42	0 30	11 09	0 58	6 14
17	3 15	0S 03	0 09	15 31	0 48	18 39	0 38	22 39	0 25	21 41	0 30	11 11	0 58	6 12
19	2 54	1 05	0 16	14 52	0 49	19 01	0 38	22 39	0 25	21 40	0 30	11 13	0 58	6 10
21	2 28	2 07	0 22	14 12	0 50	19 23	0 38	22 39	0 25	21 39	0 30	11 15	0 58	6 09
23	1 59	3 03	0 29	13 30	0 51	19 44	0 38	22 40	0 25	21 38	0 30	11 17	0 58	6 07
25	1 29	3 53	0 35	12 47	0 52	20 04	0 38	22 40	0 25	21 37	0 30	11 20	0 58	6 05
27	0 58	4 33	0 41	12 02	0 53	20 23	0 38	22 40	0 25	21 36	0 30	11 22	0 58	6 04
29	0 28	5 03	0 46	11 16	0 54	20 42	0 38	22 40	0 25	21 35	0 30	11 24	0 58	6 02
31	0N 01	5 S 23	0S 52	10 S28	0N55	21N00	0N 38	22S41	0N25	21S34	0 S 30	11N26	0 S 58	6 S 00

1st Mar. : Rahu Decli.20°N58'

1st Mar. Mean Ayansmsa : 24°07'29"

Full Moon : 21st, 7h 13m

Last Quarter : 28th, *9h 40m*

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T.						Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
				Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.					
			27 Nakshatra										7/21 naks
			h m s	s ° ′ ″	° ′	s ° ′ ″	° ′	° ′		h m			s ° ′ ″
1 M	91	11	0 37 22	11 16 51 22	4N21	9 28 35 54	2S 27	16S 16		9 13	23	26	2 29 32 56
2 Tu	92	12	0 41 18	11 17 50 37	4 44	10 10 25 02	3 18	12 55		9 57	24	27	2 29 26 51
3 W	93	13	0 45 15	11 18 49 49	5 07	10 22 20 00	4 01	9 03		10 41	25	28	2 29 17 55
4 Th	94	14	0 49 11	11 19 49 00	5 30	11 04 23 25	4 33	4 46		11 22	—	29	2 29 06 30
5 F	95	15	0 53 08	11 20 48 08	5 53	11♌16 36 57	4 53	0S 15		12 05	26	30	2 28 53 19
6 St	96	16	0 57 04	11 21 47 15	6 16	11 29 01 27	5 00	4N20		12 49	27	1	2 28 39 27
7 ♑	97	17	1 01 01	11 22 46 19	6 38	0 11 37 13	4 52	8 50		13 34	1	2	2 28 26 08
8 M	98	18	1 04 57	11 23 45 22	7 01	0 24 24 11	4 30	13 00		14 21	2	3	2 28 14 33
9 Tu	99	19	1 08 54	11 24 44 22	7 23	1 07 22 24	3 53	16 39		15 12	3	4	2 28 05 34
10 W	100	20	1 12 51	11 25 43 20	7 46	1 20 32 06	3 04	19 31		16 05	4	5	2 27 59 37
11 Th	101	21	1 16 47	11 26 42 15	8 08	2 03 54 00	2 03	21 22		16 59	5	6	2 27 56 37
12 F	102	22	1 20 44	11 27 41 09	8 30	2 17 29 07	0S 55	22 01		19 59	6	7	2 27 55 36
13 St	103	23	1 24 40	11 28 40 00	8 52	3 01 18 39	0N 18	21 21		18 56	7	8	2 27 55 37
14 ♑	104	24	1 28 37	11n29 38 49	9 13	3 15 23 10	1 31	19 20		19 54	8	9	2 27 55 14
15 M	105	25	1 32 33	0 00 37 35	9 35	3 29 42 23	2 39	16 05		20 51	9	10	2 27 53 11
16 Tu	106	26	1 36 30	0 01 36 19	9 56	4 14 14 13	3 39	11 49		21 45	11	12	2 27 48 36
17 W	107	27	1 40 26	0 02 35 01	10 18	4 28 54 30	4 24	6 49		22 38	12	13	2 27 41 13
18 Th	108	28	1 44 23	0 03 33 41	10 39	5 13 37 00	4 52	1N24		23 29	13	14	2 27 31 26
19 F	109	29	1 48 20	0 04 32 19	11 00	5♍28 14 13	5 00	4S 03		—	14	15	2 27 20 03
20 St	110	30	1 52 16	0 05 30 55	11 21	6 12 38 25	4 50	9 12		0 21	15	16	2 27 08 22
21 ♑	111	1	1 56 13	0 06 29 29	11 41	6 26 43 06	4 22	13 45		1 13	16	17	2 26 57 37
22 M	112	2	2 00 09	0 07 28 01	12 01	7 10 23 55	3 39	17 27		2 06	17	18	2 26 48 48
23 Tu	113	3	2 04 06	0 08 26 31	12 22	7 23 39 08	2 45	20 08		2 58	18	19	7/20 42 30
24 W	114	4	2 08 02	0 09 25 00	12 42	8 06 29 31	1 45	21 41		3 51	19	20	2 26 38 47
25 Th	115	5	2 11 59	0 10 23 27	13 01	8 18 57 55	0N 41	22 07		4 43	20	21	2 26 37 13
26 F	116	6	2 15 55	0 11 21 53	13 21	9 01 08 34	0S 24	21 29		5 34	21	22	2 26 36 58
27 St	117	7	2 19 52	0 12 20 16	13 40	9 13 06 33	1 26	19 51		6 23	22	23	2 26 37 01
28 ♑	118	8	2 23 49	0n13 18 39	13 59	9 24 57 18	2 24	17 23		7 09	23	24	2 26 36 17
29 M	119	9	2 27 45	0 14 16 59	14 18	10 06 46 11	3 16	14 13		8 53	—	25	2 26 33 53
30 Tu	120	10	2 31 42	0 15 15 19	14N37	10 18 38 11	4 S 00	10S 28		8 37	24	26	2 26 29 12

Lunar Chaitra Sukladi (Sudi) begins from April 5, 14h 20m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages							Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
		☿	♀	♂	♃	♄	♅	♆				
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	12 04 00	10 34	9 57	15 16	4 58	6 48	13 19	10 36	5 30	17 52	5 53	18 15
3	12 03 24	10 30	9 59	15 13	4 50	6 41	13 11	10 28	5 28	17 53	5 51	18 16
5	12 02 54	10 27	10 00	15 11	4 43	6 33	13 04	10 21	5 26	17 53	5 49	18 17
7	12 02 18	10 24	10 01	15 09	4 35	6 26	12 57	10 13	5 24	17 54	5 47	18 18
9	12 01 42	10 23	10 02	15 06	4 27	6 18	12 49	10 06	5 23	17 55	5 45	18 18
11	12 01 12	10 22	10 04	15 04	4 19	6 11	12 42	9 58	5 21	17 55	5 44	18 19
13	12 00 42	10 22	10 05	15 02	4 11	6 03	12 34	9 50	5 19	17 56	5 42	18 20
15	12 00 12	10 23	10 06	14 59	4 03	5 55	12 27	9 43	5 17	17 57	5 40	18 21
17	11 59 42	10 24	10 07	14 57	3 55	5 48	12 19	9 35	5 15	17 58	5 38	18 21
19	11 59 12	10 25	10 08	14 55	3 47	5 40	12 12	9 27	5 14	17 58	5 37	18 22
21	11 58 48	10 27	10 09	14 53	3 39	5 32	12 05	9 20	5 12	17 59	5 35	18 23
23	11 58 24	10 30	10 10	14 51	3 31	5 24	11 57	9 12	5 10	18 00	5 33	18 24
25	11 58 00	10 33	10 11	14 48	3 23	5 17	11 50	9 05	5 09	18 01	5 32	18 25
27	11 57 42	10 36	10 12	14 46	3 14	5 09	11 42	8 57	5 07	18 01	5 30	18 26
29	11 57 24	10 40	10 13	14 44	3 06	5 01	11 35	8 49	5 06	18 02	5 29	18 26
30	11 57 18	10 42	10 14	14 43	3 02	4 57	11 31	8 45	5 05	18 03	5 28	18 27

Sun enters : Mesha (Sidereal) Apr. 14th, 14*h* 09*m*. *Trop. Taurus* (♉) : Apr. 20th, 14*h* 25*m*

New Moon : 5th, 14h 20m **First Quarter : 12th, *24h 36m***

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.								
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)
	25 naks. s ° ′	24 naks. s ° ′	3 naks. s ° ′	19 naks. s ° ′	20 naks. s ° ′	1 naks. s ° ′	25 naks. s ° ′	21 naks. s ° ′	*7/21 naks* s ° ′
1	10 22 31	10 12 07	1 06 22	8 00 05	8 25 43	0 07 10	10 22 58	8 28 53	2 28 41
2	10 22 51	10 13 19	1 07 02	8 00 07	8 25 46	0 07 13	10 23 00	8 28 54	2 28 38
3	10 23 17	10 14 31	1 07 42	8 00 09	8 25 48	0 07 16	10 23 02	8 28 55	2 28 34
4	10 23 47	10 15 44	1 08 21	8 00 10	8 25 51	0 07 20	10 23 04	8 28 55	2 28 31
5	10 24 21	10 16 56	1 09 01	8 00 11	8 25 53	0 07 23	10 23 06	8 28 56	2 28 28
6	10 24 59	10 18 09	1n09 40	8 00 12	8 25 56	0 07 26	10 23 08	8 28 57	2 28 25
7	10 25 42	10n19 21	1 10 20	8 00 12	8 25 58	0 07 30	10 23 11	8 28 57	2 28 22
8	10 26 27	10 20 33	1 11 00	8 00 13	8 26 00	0 07 33	10 23 13	8 28 58	2 28 19
9	10 27 16	10 21 46	1 11 39	8 00 13	8 26 02	0 07 37	10 23 15	8 28 58	2 28 15
10	10 28 09	10 22 58	1 12 19	8R00 14	8 26 04	0 07 40	10 23 17	8 28 58	2 28 12
11	10e29 04	10 24 11	1 12 58	8 00 14	8 26 06	0 07 43	10 23 19	8 28 59	2 28 09
12	11 00 03	10 25 23	1 13 38	8 00 14	8 26 08	0 07 47	10 23 21	8 28 59	2 28 06
13	11 01 04	10 26 36	1 14 17	8 00 13	8 26 10	0 07 50	10 23 22	8 29 00	2 28 03
14	11 02 08	10 27 48	1 14 57	8 00 13	8 26 11	0 07 54	10 23 24	8 29 00	2 27 59
15	11n03 14	10 29 01	1 15 36	8 00 12	8 26 13	0 07 57	10 23 26	8 29 00	2 27 56
16	11 04 23	11 00 13	1 16 15	8 00 11	8 26 14	0 08 00	10 23 28	8 29 01	2 27 53
17	11 05 34	11 01 26	1 16 55	8 00 10	8 26 15	0 08 03	10 23 30	8 29 01	2 27 50
18	11 06 48	11n02 39	1 17 34	8 00 09	8 26 17	0 08 07	10 23 32	8 29 01	2 27 47
19	11 08 04	11 03 51	1 18 14	8 00 07	8 26 18	0 08 11	10 23 34	8 29 01	2 27 44
20	11 09 22	11 05 04	1 18 53	8 00 06	8 26 19	0 08 14	10 23 36	8 29 01	2 27 40
21	11 10 42	11 06 16	1 19 32	8 00 04	8 26 20	0 08 18	10 23 37	8 29 01	2 27 37
22	11 12 03	11 07 29	1 20 11	8n00 02	8 26 21	0d08 21	10 23 39	8 29 02	2 27 34
23	11 13 27	11 08 42	1 20 51	8 00 00	8 26 21	0 08 24	10 23 41	8 29 02	2 27 31
24	11 14 53	11 09 54	1 21 30	7 29 57	8 26 22	0 08 28	10 23 43	8R29 02	2 27 28
25	11n16 21	11 11 07	1 22 09	7 29 55	8 26 23	0 08 31	10 23 44	8 29 02	2 27 25
26	11 17 51	11 12 20	1n22 48	7 29 52	8 26 23	0 08 35	10 23 46	8 29 02	2 27 21
27	11 19 22	11 13 32	1 23 27	7 29 49	8 26 23	0 08 38	10 23 48	8 29 02	2 27 18
28	11 20 56	11 14 45	1 24 06	7 29 46	8 26 24	0 08 42	10 23 49	8 29 01	2 27 15
29	11 22 31	11n15 58	1 24 46	7 29 43	8 26 24	0 08 45	10 23 51	8 29 01	2 27 12
30	11 24 08	11 17 11	1 25 25	7 29 39	8R26 24	0 08 49	10 23 53	8 29 01	2 27 09

Lunar Chaitra Krishnadi (Vaisakha Vadi) begins from April 19,16h 42m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	0S 14	5S 30	0S 54	10S04	0N55	21N09	0N38	22S41	0N25	21S34	0S 29	11N28	0S 58	5S59
3	0 40	5 35	0 59	9 15	0 56	21 26	0 38	22 41	0 25	21 33	0 29	11 30	0 58	5 58
5	1 03	5 31	1 04	8 25	0 57	21 42	0 38	22 41	0 24	21 32	0 29	11 32	0 58	5 56
7	1 24	5 19	1 09	7 33	0 57	21 58	0 38	22 41	0 24	21 32	0 29	11 35	0 58	5 55
9	1 42	4 58	1 13	6 41	0 58	22 13	0 38	22 41	0 24	21 31	0 29	11 37	0 58	5 53
11	1 58	4 30	1 17	5 48	0 59	22 27	0 38	22 41	0 24	21 31	0 29	11 39	0 58	5 52
13	2 11	3 55	1 20	4 55	0 59	22 41	0 38	22 41	0 24	21 30	0 29	11 42	0 58	5 50
15	2 22	3 14	1 24	4 00	1 00	22 54	0 38	22 41	0 24	21 30	0 29	11 44	0 58	5 49
17	2 31	2 26	1 27	3 06	1 01	23 06	0 38	22 41	0 24	21 30	0 29	11 46	0 58	5 47
19	2 38	1 32	1 29	2 10	1 01	23 17	0 38	22 41	0 24	21 29	0 29	11 49	0 59	5 46
21	2 42	0S 34	1 32	1 15	1 02	23 28	0 38	22 40	0 24	21 29	0 29	11 51	0 59	5 45
23	2 44	0N30	1 34	0S 19	1 02	23 37	0 38	22 40	0 24	21 29	0 29	11 53	0 59	5 43
25	2 43	1 38	1 36	0N37	1 03	23 46	0 38	22 40	0 24	21 29	0 29	11 56	0 59	5 42
27	2 41	2 51	1 37	1 33	1 03	23 55	0 38	22 40	0 24	21 29	0 29	11 58	0 59	5 41
29	2 36	4 08	1 38	2 29	1 04	24 02	0 38	22 40	0 24	21 29	0 29	12 01	0 59	5 39
30	2S 33	4N48	1S 39	2N57	1N04	24N05	0N38	22S39	0N24	21S29	0S 29	12N02	0S59	5S39

1st Apr. : Rahu Decli. 21°N 30'

1st Apr. Mean Ayanamsa : 24°07'33"

Full Moon : 19th,16h 42m

Last Quarter : 26th, *27h 48m*

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
				2 Nakshatra								7/20 naks.
			h m s	s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			s ° ′ ″
1 W	121	11	2 35 38	0 16 13 36	14N55	11 00 37 43	4 S 33	6S 16	9 18	25	27	2 26 22 03
2 Th	122	12	2 39 35	0 17 11 52	15 13	11 12 48 12	4 54	1S 46	10 01	26	28	2 26 12 38
3 F	123	13	2 43 31	0 18 10 07	15 31	11 25 12 03	5 02	2N 54	10 45	27	29	2 26 01 33
4 St	124	14	2 47 28	0 19 08 19	15 49	0♌07 50 33	4 56	7 31	11 29	1	30	2 25 49 45
5 ♋	125	15	2 51 24	0 20 06 30	16 06	0 20 43 52	4 34	11 55	12 16	2	1	2 25 38 18
6 M	126	16	2 55 21	0 21 04 40	16 24	1 03 51 12	3 58	15 50	13 07	3	2	2 25 28 18
7 Tu	127	17	2 59 18	0 22 02 47	16 40	1 17 11 13	3 08	19 01	13 59	4	3	2 25 20 35
8 W	128	18	3 03 14	0 23 00 53	16 57	2 00 42 16	2 07	21 13	14 56	5	4	2 25 15 34
9 Th	129	19	3 07 11	0 23 58 57	17 13	2 14 22 58	0 S 58	22 12	15 54	6	5	2 25 13 11
10 F	130	20	3 11 07	0 24 56 59	17 29	2 28 12 10	0 N 16	21 51	16 52	7	6	2 25 12 49
11 St	131	21	3 15 04	0n25 55 00	17 45	3 12 08 10	1 29	20 09	17 49	8	7	2 25 13 30
12 ♋	132	22	3 19 00	0 26 52 58	18 00	3 26 13 20	2 38	17 12	18 45	9	8	2 25 14 04
13 M	133	23	3 22 57	0 27 50 54	18 15	4 10 23 52	3 37	13 13	19 38	10	9	2 25 13 25
14 Tu	134	24	3 26 53	0 28 48 49	18 30	4 24 39 14	4 24	8 29	20 29	11	10	2 25 10 49
15 W	135	25	3 30 50	0 29 46 42	18 45	5 08 56 52	4 54	3N17	21 21	12	11	2 25 05 58
16 Th	136	26	3 34 47	1 00 44 33	18 59	5 23 13 20	5 06	2S 06	22 10	13	12	2 24 59 07
17 F	137	27	3 38 43	1 01 42 22	19 13	6 07 23 16	4 59	7 19	23 01	15	13	2 24 50 57
18 St	138	28	3 42 39	1 02 40 10	19 26	6♍21 22 40	4 34	12 07	—	16	15	2 24 42 28
19 ♋	139	29	3 46 36	1 03 37 56	19 39	7 05 06 46	3 53	16 11	23 53	17	16	2 24 34 37
20 M	140	30	3 50 33	1 04 35 41	19 52	7 18 32 17	3 01	19 19	0 46	18	17	2 24 28 16
21 Tu	141	31	3 54 29	1 05 33 25	20 05	8 01 37 28	1 59	21 23	1 39	19	18	2 24 23 54
22 W	142	1	3 58 26	1 06 31 07	20 17	8 14 22 24	0 N 54	22 16	2 32	20	19	2 24 21 38
23 Th	143	2	4 02 22	1 07 28 49	20 29	8 26 48 23	0 S 13	22 02	3 25	—	20	2 24 21 10
24 F	144	3	4 06 19	1 08 26 29	20 40	9 08 59 30	1 18	20 44	4 14	21	—	2 24 21 57
25 St	145	4	4 10 16	1n09 24 08	20 51	9 20 58 46	2 19	18 31	5 02	22	21	2 24 23 14
26 ♋	146	5	4 14 12	1 10 21 46	21 02	10 02 51 15	3 13	15 33	5 48	23	22	2 24 24 16
27 M	147	6	4 18 09	1 11 19 23	21 12	10 14 41 59	3 59	11 57	6 31	24	23	2 24 24 22
28 Tu	148	7	4 22 05	1 12 16 59	21 22	10 26 36 01	4 35	7 53	7 15	25	24	2 24 23 04
29 W	149	8	4 26 02	1 13 14 34	21 32	11 08 38 12	4 59	3S 28	7 57	26	25	2 24 20 10
30 Th	150	9	4 29 58	1 14 12 09	21 41	11 20 52 46	5 09	1N09	8 38	27	26	2 24 15 43
31 F	151	10	4 33 55	1 15 09 42	21N50	0 03 23 06	5 S 06	5N49	9 23	1	27	2 24 10 05

Lunar Vaisakha Sukladi (Sudi) begins from May 4, 28h 16m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	11 57 12	10 44	10 14	14 42	2 58	4 53	11 27	8 42	5 05	18 03	5 27	18 27
3	11 56 54	10 48	10 15	14 40	2 49	4 45	11 20	8 34	5 03	18 04	5 26	18 28
5	11 56 42	10 54	10 17	14 37	2 41	4 37	11 13	8 26	5 02	18 05	5 25	18 29
7	11 56 36	10 59	10 18	14 35	2 32	4 29	11 05	8 19	5 01	18 06	5 23	18 30
9	11 56 30	11 05	10 19	14 33	2 24	4 21	10 58	8 11	5 00	18 07	5 22	18 31
11	11 56 24	11 12	10 20	14 31	2 15	4 13	10 50	8 03	4 58	18 07	5 21	18 32
13	11 56 24	11 20	10 21	14 29	2 07	4 05	10 43	7 55	4 57	18 08	5 20	18 23
15	11 56 24	11 28	10 23	14 26	1 58	3 57	10 35	7 48	4 57	18 09	5 19	18 34
17	11 56 24	11 37	10 24	14 24	1 49	3 49	10 28	7 40	4 56	18 10	5 18	18 35
19	11 56 30	11 46	10 25	14 22	1 40	3 41	10 21	7 32	4 55	18 11	5 18	18 36
21	11 56 36	11 56	10 27	14 20	1 32	3 33	10 13	7 25	4 54	18 12	5 17	18 37
23	11 56 42	12 06	10 28	14 18	1 23	3 25	10 06	7 17	4 53	18 13	5 16	18 38
25	11 56 54	12 17	10 30	14 15	1 14	3 17	9 58	7 09	4 53	18 14	5 16	18 39
27	11 57 06	12 27	10 32	14 13	1 05	3 09	9 51	7 01	4 52	18 15	5 15	18 39
29	11 57 18	12 38	10 33	14 11	0 56	3 00	9 43	6 54	4 52	18 16	5 15	18 40
31	11 57 36	12 48	10 35	14 09	0 47	2 52	9 36	6 46	4 52	18 16	5 14	18 41

Sun enters : Vrisha (Sidereal) May 15th, 11*h* 01*m*. *Trop. Gemini* (♊): May 21st, 13*h* 29*m*

New Moon : **4th,28h 16m** **First Quarter : 12th, *6h 42m***

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.								
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)
	27 naks.	27 naks.	5 naks.	*18 naks.*	*20 naks.*	1 naks.	25 naks.	*21 naks.*	*7/21 naks.*
	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′
1	11 25 47	11 18 23	1 26 04	7*R*29 36	8*R*26 24	0 08 52	10 23 54	8*R*29 01	2 27 05
2	11 27 28	11 19 36	1 26 43	7 29 32	8 26 24	0 08 55	10 23 56	8 29 01	2 27 02
3	11n29 10	11 20 49	1 27 22	7 29 28	8 26 23	0 08 59	10 23 57	8 29 01	2 26 59
4	0 00 54	11 22 02	1 28 01	7 29 24	8 26 23	0 09 02	10 23 59	8 29 00	2 26 56
5	0 02 41	11 23 15	1 28 39	7 29 20	8 26 23	0 09 06	10 24 00	8 29 00	2 26 53
6	0 s 04 29	11 24 27	1 29 19	7 29 15	8 26 22	0 09 10	10 24 02	8 29 00	2 26 50
7	0 06 18	11 25 40	1 29 58	7 29 10	8 26 22	0 09 12	10 24 03	8 28 59	2 26 46
8	0 08 10	11 26 53	2 00 37	7 29 06	8 26 21	0 09 16	10 24 04	8 28 59	7/2026 43
9	0 10 04	11 28 06	2 01 16	7 29 01	8 26 20	0 09 19	10 24 06	8 28 59	2 26 40
10	0 n11 59	11n29 19	2 01 55	7 28 56	8 26 19	0 09 22	10 24 07	8 28 58	2 26 37
11	0 13 56	0 00 32	2 02 33	7 28 51	8 26 18	0 09 26	10 24 08	8 28 58	2 26 34
12	0 15 55	0 01 44	2 03 12	7 28 45	8 26 17	0 09 29	10 24 10	8 28 57	2 26 30
13	0 17 56	0 02 57	2 03 51	7 28 40	8 26 16	0 09 32	10 24 11	8 28 57	2 26 27
14	0 19 58	0 04 10	2 04 30	7 28 34	8 26 14	0 09 36	10 24 12	8 28 56	2 26 24
15	0 22 02	0 05 23	2 05 09	7 28 28	8 26 13	0 09 39	10 24 13	8 28 56	2 26 21
16	0 24 08	0 06 36	2 05 48	7 28 23	8 26 11	0 09 42	10 24 15	8 28 55	2 26 18
17	0n 26 15	0 07 49	2n06 26	7 28 17	8 26 10	0 09 46	10 24 16	8 28 55	2 26 15
18	0 28 23	0 09 02	2 07 05	7 28 10	8 26 08	0 09 49	10 24 17	8 28 54	2 26 11
19	1 00 32	0 10·15	2 07 44	7 28 04	8 26 06	0 09 52	10 24 18	8 28 53	2 26 08
20	1 02 42	0 11 27	2 08 22	7 27 58	8 26 05	0 09 55	10 24 19	8 28 53	2 26 05
21	1♂04 53	0n12 40	2 09 01	7 27 51	8 26 03	0 09 58	10 24 20	8 28 52	2 26 02
22	1 07 05	0 13 53	2 09 40	7 27 45	8 26 01	0 10 02	10 24 21	8 28 51	2 25 59
23	1n 09 16	0 15 06	2 10 18	7 27 38	8 25 59	0 10 05	10 24 22	8 28 50	2 25 55
24	1 11 28	0 16 19	2 10 57	7 27 31	8 25 56	0 10 08	10 24 23	8 28 50	2 25 52
25	1 13 39	0 17 32	2 11 36	7 27 25	8 25 54	0 10 11	10 24 24	8 28 49	2 25 49
26	1 15 50	0 18 45	2 12 14	7 27·18	8 25 52	0 10 14	10 24 25	8 28 48	2 25 46
27	1 17 59	0 19 58	2 12 53	7 27 11	8 25 49	0 10 17	10 24 25	8 28 47	2 25 43
28	1 20 08	0 21 11	2 13 32	7 27 03	8 25 47	0 10 20	10 24 26	8 28 46	2 25 39
29	1n 22r15	0 22 24	2 14 10	7 26 56	8 25 44	0 10 23	10 24 27	8 28 45	2 25 36
30	1 24 21	0 23 37	2 14 49	7 26 49	8 25 42	0 10 26	10 24 28	8 28 44	2 25 33
31	1 26 24	0 24 50	2 15 27	7 26 42	8 25 38	0 10 29	10 24 28	8 28 43	2 25 30

Lunar Vaisakha Krishnadi (Jyaistha Vadi) begins from May18,26h 41m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	2 S 30	5 N28	1 S 39	3N25	1 N04	24N09	0N38	22S 39	0N23	21S29	0 S 29	12N03	0 S 59	5 S38
3	2 21	6 52	1 40	4 21	1 05	24 14	0 38	22 39	0 23	21 29	0 29	12 05	0 59	5 37
5	2 10	8 19	1 40	5 17	1 05	24 20	0 38	22 39	0 23	21 29	0 29	12 08	0 59	5 36
7	1 57	9 48	1 40	6 12	1 06	24 24	0 38	22 38	0 23	21 30	0 29	12 10	0 59	5 35
9	1 42	11 18	1 40	7 07	1 06	24 27	0 38	22 38	0 23	21 30	0 29	12 12	0 59	5 34
11	1 26	12 50	1 39	8 01	1 06	24 30	0 38	22 37	0 23	21 30	0 29	12 14	0 59	5 33
13	1 08	14 23	1 38	8 54	1 07	24 32	0 37	22 37	0 23	21 31	0 29	12 17	0 59	5 32
15	0 48	16 00	1 37	9 47	1 07	24 33	0 37	22 36	0 23	21 31	0 29	12 19	0 59	5 31
17	0 28	17 23	1 35	10 39	1 08	24 34	0 37	22 36	0 23	21 32	0 29	12 21	1 00	5 30
19	0S 07	18 49	1 34	11 30	1 08	24 33	0 37	22 35	0 23	21 32	0 29	12 23	1 00	5 30
21	0N 14	20 10	1 32	12 20	1 08	24 32	0 37	22 35	0 23	21 33	0 29	12 26	1 00	5 29
23	0 35	21 24	1 29	13 09	1 08	24 30	0 37	22 34	0 22	21 34	0 29	12 28	1 00	5 28
25	0 55	22 30	1 27	13 57	1 09	24 27	0 37	22 33	0 22	21 34	0 29	12 30	1 00	5 28
27	1 13	23 26	1 24	14 43	1 09	24 24	0 37	22 33	0 22	21 35	0 29	12 32	1 00	5 27
29	1 28	24 12	1 21	15 29	1 09	24 20	0 36	22 32	0 22	21 36	0 29	12 34	1 00	5 26
31	1 N42	24N47	1 S18	16N12	1N09	24N15	0N26	22S 31	0N22	21S37	0 S29	12N36	1 S 00	5S 26

1st May : Rahu Decli.21°N 58'

1st May Mean Ayanamsa : 24°07'37"

Full Moon* : *18th, 26h 41m

Last Quarter : 26th, *22h,04m*

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
				4 Nakshatra								7/20 naks.
			h m s	s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			s ° ′ ″
1 St	152	11	4 37 51	1 16 07 15	21N59	0 16 11 28	4S47	10N21	10 08	2	28	2 24 03 52
2 ♋	153	12	4 41 48	1 17 04 46	22 07	0 29 18 45	4 14	14 32	10 57	3	29	2 23 57 44
3 M	154	13	4 45 45	1 18 02 17	22 15	1♂12 44 28	3 25	18 05	11 50	4	30	2 23 52 25
4 Tu	155	14	4 49 41	1 18 59 47	22 22	1 26 26 43	2 24	20 43	12 46	5	1	2 23 48 27
5 W	156	15	4 53 38	1 19 57 15	22 29	2 10 22 38	1S12	22 09	13 45	6	2	2 23 46 09
6 Th	157	16	4 57 34	1 20 54 43	22 36	2 24 28 40	0N04	22 13	14 44	7	3	2 23 45 28
7 F	158	17	5 01 31	1 21 52 09	22 42	3 08 41 14	1 21	20 50	15 44	8	4	2 23 46 06
8 St	159	18	5 05 27	1♏22 49 35	22 48	3 22 56 53	2 33	18 09	16 42	9	6	2 23 47 26
9 ♋	160	19	5 09 24	1 23 46 59	22 53	4 07 12 43	3 36	14 22	17 35	10	7	2 23 48 46
10 M	161	20	5 13 20	1 24 44 22	22 58	4 21 26 18	4 25	9 46	18 27	11	8	2 23 49 30
11 Tu	162	21	5 17 17	1 25 41 44	23 03	5 05 35 29	4 58	4N40	19 17	12	9	2 23 49 10
12 W	163	22	5 21 19	1 26 39 05	23 07	5 19 38 21	5 13	0S37	20 07	13	10	2 23 47 37
13 Th	164	23	5 25 10	1 27 36 24	23 11	6 03 32 58	5 09	5 50	20 56	14	11	2 23 44 58
14 F	165	24	5 29 07	1 28 33 44	23 14	6 17 17 23	4 48	10 41	21 45	15	12	2 23 41 37
15 St	166	25	5 33 03	1 29 31 02	23 17	7 00 49 42	4 10	14 57	22 37	16	13	2 23 38 05
16 ♋	167	26	5 37 00	2 00 28 19	23 20	7 14 08 14	3 20	18 23	23 29	17	14	2 23 34 52
17 M	168	27	5 40 56	2 01 25 35	23 22	7♐27 11 45	2 20	20 49	—	18	15	2 23 32 24
18 Tu	169	28	5 44 53	2 02 22 51	23 23	8 09 59 45	1 14	22 09	0 22	19	16	2 23 30 56
19 W	170	29	5 48 49	2 03 20 06	23 25	8 22 32 31	0N05	22 19	1 14	20	17	2 23 30 30
20 Th	171	30	5 52 46	2 04 17 21	23 26	9 04 51 15	1S02	21 23	2 06	21	18	2 23 30 58
21 F	172	31	5 56 43	2 05 14 36	23 26	9 16 58 04	2 06	19 28	2 56	22	19	2 23 32 04
22 St	173	1	6 00 39	2♏06 11 50	23 26	9 28 55 53	3 03	16 43	3 42	23	20	2 23 33 27
23 ♋	174	2	6 04 36	2 07 09 04	23 26	10 10 48 17	3 53	13 19	4 26	24	21	2 23 34 48
24 M	175	3	6 08 32	2 08 06 18	23 25	10 22 39 27	4 32	4 23	5 09	25	22	2 23 35 49
25 Tu	176	4	6 12 29	2 09 03 32	23 24	11 04 33 53	4 59	5 06	5 52	—	23	2 23 36 18
26 W	177	5	6 16 25	2 10 00 45	23 22	11 16 36 15	5 14	0S35	6 33	26	—	2 23 36 12
27 Th	178	6	6 20 22	2 10 57 59	23 20	11 28 51 09	5 15	4N03	7 15	27	24	2 23 35 32
28 F	179	7	6 24 18	2 11 55 13	23 18	0 11 22 41	5 01	8 37	8 00	1	25	2 23 34 26
29 St	180	8	6 28 15	2 12 52 26	23 15	0 24 14 15	4 32	12 55	8 46	2	26	2 23 33 09
30 ♋	181	9	6 32 12	2 13 49 40	23N12	1 07 28 03	3S48	16N45	9 36	3	27	2 23 31 53

LunarJyaistha Sukladi (Sudi) begins from June 3, 15h 32m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	11 57 48	12 53	10 36	14 07	0 43	2 48	9 32	6 42	4 52	18 17	5 14	18 42
3	11 58 06	13 02	10 38	14 05	0 34	2 40	9 25	6 34	4 51	18 18	5 14	18 43
5	11 58 24	13 11	10 40	14 03	0 25	2 31	9 17	6 26	4 51	18 18	5 14	18 43
7	11 58 48	13 19	10 42	14 01	0 16	2 23	9 10	6 18	4 51	18 19	5 14	18 44
9	11 59 12	13 26	10 44	13 58	0 07	2 15	9 02	6 11	4 51	18 20	5 14	18 45
11	11 59 36	13 33	10 46	13 56	23 54	2 06	8 54	6 03	4 51	18 2.	5 14	18 46
13	12 00 00	13 38	10 49	13 54	23 45	1 58	8 47	5 55	4 51	18 21	5 14	18 46
15	12 00 24	13 43	10 51	13 51	23 36	1 50	8 39	5 47	4 52	18 22	5 14	18 47
17	12 00 48	13 46	10 53	13 49	23 27	1 41	8 32	5 39	4 52	18 23	5 14	18 47
19	12 01 18	13 49	10 56	13 46	23 18	1 33	8 24	5 32	4 52	18 23	5 15	18 48
21	12 01 42	13 50	10 58	13 44	23 09	1 24	8 17	5 24	4 53	18 24	5 15	18 48
23	12 02 06	13 51	11 01	13 41	23 00	1 16	8 09	5 16	4 53	18 24	5 16	18 49
25	12 02 30	13 50	11 03	13 39	22 51	1 07	8 02	5 08	4 53	18 24	5 16	18 49
27	12 03 00	12 49	11 06	13 36	22 42	0 59	7 54	5 00	4 54	18 25	5 17	18 49
29	12 03 24	13 46	11 09	13 34	22 33	0 51	7 46	4 52	4 55	18 25	5 17	18 50
31	12 03 36	13 44	11 10	13 33	22 29	0 46	7 43	4 48	4 55	18 25	5 18	18 50

Sun enters : Mithuna (Sidereal) Jun. 15th, 17*h* 38*m* *Trop. Cancer* (♋): Jun. 21st, 21*h* 24*m*

New Moon : 3rd, 15h 32m **First Quarter : 10th, *11h 29m***

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.								
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)
	5 naks.	2 naks.	6 naks.	*18 naks.*	*20 naks.*	1 naks.	25 naks.	*21 naks.*	*7/20 naks.*
	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′
1	1 28 26	0n26 03	2 16 06	7*R*26 34	8*R*25 36	0 10 32	10 24 29	8*R* 28 42	2 25 27
2	2 00 26	0 27 16	2 16 44	7 26 27	8 25 33	0 10 35	10 24 30	8 28 41	2 25 24
3	2 02 24	0 28 29	2 17 23	7 26 19	8 25 30	0 10 38	10 24 30	8 28 40	2 25 21
4	2 04 18	0 29 42	2 18 01	7 26 12	8 25 27	0 10 41	10 24 31	8 28 39	2 25 17
5	2n 06 11	1 00 55	2 18 40	7 26 04	8 25 24	0 10 44	10 24 32	8 28 38	2 25 14
6	2 08 01	1 02 08	2 19 18	7 25 57	8 25 21	0 10 47	10 24 32	8 28 37	2 25 11
7	2 09 48	1 03 21	2n19 57	7 25 49	8 25 18	0 10 49	10 24 33	8 28 36	2 25 08
8	2 11 33	1 04 35	2 20 35	7 25 42	8 25 14	0 10 52	10 24 33	8 28 35	2 25 05
9	2 13 16	1 05 48	2 21 13	7 25 34	8 25 11	0 10 55	10 24 33	8 28 34	2 25 01
10	2 14 55	1 07 01	2 21 52	7*R*25 26	8 25 07	0 10 58	10 24 34	8 28 33	2 24 58
11	2 16 32	1 08 14	2 22 30	7 25 19	8 25 04	0 11 00	10 24 34	8 28 32	2 24 55
12	2 18 06	1n09 27	2 23 09	7 25 11	8 25 00	0 11 03	10 24 35	8 28 31	2 24 52
13	2n 19 38	1 10 40	2 23 47	7 25 03	8 24 57	0 11 06	10 24 35	8 28 29	2 24 49
14	2 21 07	1 11 53	2 24 25	7 24 56	8 24 53	0 11 08	10 24 35	8 28 28	2 24 46
15	2 22 33	1 13 06	2 25 04	7 24 48	8 24 49	0 11 11	10 24 35	8 28 27	2 24 42
16	2 23 56	1 14 20	2 25 42	7 24 40	8 24 45	0 11 13	10 24 36	8 28 26	2 24 39
17	2 25 16	1 15 33	2 26 20	7 24 33	8 24 42	0 11 16	10 24 36	8 28 24	2 24 36
18	2 26 34	1 16 46	2 26 58	7 24 25	8 24 38	0 11 18	10 24 36	8 28 23	2 24 33
19	2 27 48	1 17 59	2 27 37	7 24 18	8 24 34	0 11 21	10 24 36	8 28 22	2 24 30
20	2 29 00	1 19 12	2 28 15	7 24 10	8 24 30	0 11 23	10 24 36	8 28 21	2 24 26
21	3 00 09	1 20 26	2 28 53	7 24 03	8 24 26	0 11 25	10*R*24 36	8 28 19	2 24 23
22	3 01 14	1 21 39	2 29 32	7 23 56	8 24 22	0 11 28	10 24 36	8 28 18	2 24 20
23	3 e 02 16	1n22 52	3 00 10	7 23 48	8 24 18	0 11 30	10 24 36	8 28 17	2 24 17
24	3n 03 15	1 24 05	3 00 48	7 23 41	8 24 14	0 11 32	10 24 36	8 28 15	2 24 14
25	3 04 11	1 25 19	3 01 26	7 23 34	8 24 09	0 11 34	10 24 36	8 28 14	2 24 11
26	3 05 03	1 26 32	3 02 04	7 23 27	8 24 05	0 11 37	10 24 36	8 28 13	2 24 07
27	3 05 52	1 27 45	3n02 43	7 23 20	8 24 01	0 11 39	10 24 36	8 28 11	2 24 04
28	3 06 37	1 28 59	3 03 21	7 23 13	8 23 57	0 11 41	10 24 35	8 28 10	2 24 01
29	3 07 18	2 00 12	3 03 59	7 23 06	8 23 52	0 11 43	10 24 35	8 28 08	2 23 58
30	3 07 56	2 01 25	3 04 37	7 22 59	8 23 48	0 11 45	10 24 35	8 28 07	2 23 55

Lunar Jyaistha Krishnadi (Asadha Vadi) begins from June 17, 14h 01m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	1N 48	25N01	1 S 17	16N33	1N09	24N12	0N36	22S31	0N22	21S38	0 S 29	12N37	1 S 00	5 S26
3	1 57	25 20	1 13	17 15	1 10	24 06	0 36	22 30	0 22	21 38	0 29	12 39	1 00	5 25
5	2 03	25 29	1 09	17 54	1 10	23 59	0 36	22 29	0 22	21 39	0 29	12 41	1 00	5 25
7	2 06	25 28	1 06	18 32	1 10	23 51	0 35	22 28	0 22	21 41	0 29	12 43	1 00	5 25
9	2 06	25 19	1 02	19 07	1 10	23 43	0 35	22 27	0 21	21 42	0 29	12 44	1 00	5 24
11	2 03	25 03	0 58	19 41	1 10	23 34	0 35	22 26	0 21	21 43	0 29	12 46	1 01	5 24
13	1 57	24 40	0 53	20 13	1 10	23 24	0 35	22 25	0 21	21 44	0 29	12 48	1 01	5 24
15	1 48	24 11	0 49	20 42	1 10	23 14	0 34	22 24	0 21	21 45	0 29	12 50	1 01	5 24
17	1 36	23 37	0 45	21 10	1 11	23 02	0 34	22 23	0 21	21 46	0 29	12 51	1 01	5 24
19	1 22	22 59	0 40	21 35	1 11	22 51	0 34	22 22	0 21	21 47	0 29	12 53	1 01	5 24
21	1 04	22 19	0 35	21 57	1 11	22 38	0 34	22 21	0 21	21 49	0 29	12 54	1 01	5 24
23	0 45	21 36	0 31	22 18	1 11	22 25	0 33	22 20	0 20	21 50	0 30	12 56	1 01	5 24
25	0 23	20 52	0 26	22 35	1 11	22 11	0 33	22 19	0 20	21 51	0 30	12 57	1 01	5 24
27	0 N01	20 08	0 21	22 50	1 11	21 57	0 33	22 18	0 20	21 52	0 30	12 59	1 01	5 24
29	0 S 27	19 24	0 16	23 03	1 11	21 42	0 32	22 17	0 20	21 54	0 30	13 00	1 01	5 24
30	0 S 41	19N02	0 S14	23N08	1 11	21N34	0N32	22S17	0N20	21S54	0 S30	13N01	1 S 01	5S 25

1st Jun. : Rahu Decli. 22°N 15'

1st Jun. Mean Ayanamsa : 24°07'42"

Full Moon* : *17th, 14h 01m

Last Quarter : 25th, *10h 16m*

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
			h m s	6 Nakshatra s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			7/20 naks. s ° ′ ″
1 M	182	10	6 36 08	2 14 46 53	23N08	1♌21 04 44	2 S 50	19N48	10 31	4	29	2 23 30 52
2 Tu	183	11	6 40 05	2 15 44 07	23 04	2 05 03 11	1 41	21 45	11 30	5	30	2 23 30 12
3 W	184	12	6 44 01	2 16 41 21	23 00	2 19 20 14	0 S 23	22 22	12 31	6	1	2 23 29 56
4 Th	185	13	6 47 58	2 17 38 34	22 55	3 03 51 10	0 N 57	21 30	13 32	8	2	2 23 30 02
5 F	186	14	6 51 54	2 18 35 47	22 50	3 18 30 05	2 14	19 10	14 33	9	3	2 23 30 20
6 St	187	15	6 55 51	2n19 33, 00	22 44	4 03 10 38	3 23	15 35	15 29	10	4	2 23 30 40
7 ♋	188	16	6 59 47	2 20 30 13	22 38	4 17 46 48	4 18	11 04	16 23	11	5	2 23 30 57
8 M	189	17	7 03 44	2 21 27 26	22 32	5 02 13 35	4 56	5 59	17 15	12	6	2 23 31 04
9 Tu	190	18	7 07 41	2 22 24 38	22 25	5 16 27 20	5 15	0N39	18 05	13	8	2 23 31 03
10 W	191	19	7 11 37	2 23 21 50	22 18	6 00 25 50	5 15	4 S 37	18 54	14	9	2 23 30 58
11 Th	192	20	7 15 34	2 24 19 02	22 10	6 14 08 05	4 57	9 34	19 43	15	10	2 23 30 56
12 F	193	21	7 19 30	2 25 16 14	22 02	6 27 34 02	4 23	13 57	20 32	16	11	2 23 31 00
13 St	194	22	7 23 27	2 26 13 26	21 54	7 10 44 16	3 36	17 34	21 24	17	12	2 23 31 14
14 ♋	195	23	7 27 23	2 27 10 38	21 45	7 23 39 43	2 38	20 15	22 15	18	13	2 23 31 37
15 M	196	24	7 31 20	2 28 07 50	21 36	8 06 21 28	1 34	21 52	23 07	19	14	2 23 32 00
16 Tu	197	25	7 35 16	2 29 05 02	21 26	8♌18 50 44	0N 26	22 22	—	20	15	2 23 32 15
17 W	198	26	7 39 13	3 00 02 15	21 17	9 01 08 48	0 S 42	21 46	23 59	21	16	2 23 32 16
18 Th	199	27	7 43 10	3 00 59 28	21 06	9 13 17 11	1 47	20 09	0 49	22	—	2 23 31 55
19 F	200	28	7 47 06	3 01 56 41	20 56	9 25 17 35	2 47	17 38	1 37	23	17	2 23 31 09
20 St	201	29	7 51 03	3n02 53 55	20 46	10 07 12 07	3 39	14 25	2 22	—	18	2 23 30 00
21 ♋	202	30	7 54 59	3 03 51 09	20 34	10 19 03 22	4 21	10 38	3 06	24	19	2 23 28 35
22 M	203	31	7 58 56	3 04 48 24	20 22	11 00 54 22	4 52	6 27	3 48	25	20	2 23 27 04
23 Tu	204	1	8 02 52	3 05 45 40	20 10	11 12 48 39	5 11	2 S 01	4 30	26	21	2 23 25 42
24 W	205	2	8 06 49	3 06 42 57	19 58	11 24 50 10	5 16	2N33	5 10	27	22	2 23 24 41
25 Th	206	3	8 10 45	3 07 40 14	19 45	0 07 03 12	5 07	7 04	5 53	1	23	2 23 24 13
26 F	207	4	8 14 42	3 08 37 33	19 33	0 19 32 05	4 44	11 25	6 37	2	24	2 23 24 22
27 St	208	5	8 18 39	3 09 34 52	19 19	1 02 20 53	4 06	15 22	7 25	3	25	2 23 25 02
28 ♋	209	6	8 22 35	3 10 32 12	19 06	1 15 33 04	3 14	18 41	8 17	4	26	2 23 26 12
29 M	210	7	8 26 32	3 11 29 34	18 52	1 29 10 51	2 10	21 06	9 13	5	27	2 23 27 24
30 Tu	211	8	8 30 28	3 12 26 56	18 38	2 13 14 39	0 S 56	22 18	10 13	6	28	2 23 28 19
31 W	212	9	8 34 25	3 13 24 19	18N23	2 27 42 32	0N 23	22N 03	11 14	7	29	2 23 28 33

Lunar Asadha Sukladi (Sudi) begins from July 2, 24h 46m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	12 03 48	13 42	11 12	13 31	22 25	0 42	7 39	4 44	4 55	18 25	5 18	18 50
3	12 04 12	13 37	11 14	13 29	22 16	0 34	7 31	4 36	4 56	18 25	5 19	18 50
5	12 04 30	13 31	11 17	13 26	22 07	0 25	7 23	4 28	4 57	18 25	5 19	18 50
7	12 04 54	13 24	11 20	13 24	21 58	0 17	7 16	4 21	4 57	18 25	5 20	18 50
9	12 05 12	13 15	11 23	13 21	21 50	0 08	7 08	4 13	4 58	18 25	5 21	18 50
11	12 05 30	13 05	11 26	13 18	21 41	23 55	7 01	4 05	4 59	18 25	5 22	18 49
13	12 05 42	12 54	11 28	13 16	21 32	23 47	6 53	3 57	5 00	18 24	5 22	18 49
15	12 05 54	12 42	11 31	13 13	21 24	23 38	6 45	3 49	5 01	18 24	5 23	18 49
17	12 06 06	12 29	11 34	13 10	21 15	23 30	6 38	3 41	5 01	18 23	5 24	18 48
19	12 06 18	12 16	11 37	13 08	21 07	23 21	6 30	3 33	5 02	18 23	5 25	18 47
21	12 06 24	12 02	11 39	13 05	20 58	23 13	6 22	3 25	5 03	18 22	5 26	18 47
23	12 06 30	11 49	11 42	13 02	20 50	23 05	6 14	3 17	5 04	18 22	5 27	18 46
25	12 06 30	11 37	11 44	12 59	20 42	22 56	6 07	3 09	5 05	18 21	5 28	18 45
27	12 06 30	11 25	11 47	12 57	20 33	22 48	5 59	3 01	5 06	18 20	5 28	18 44
29	12 06 30	11 14	11 49	12 54	20 25	22 39	5 51	2 53	5 07	18 19	5 29	18 43
31	12 06 24	11 05	11 52	12 51	20 17	22 31	5 43	2 45	5 07	18 18	5 30	18 42

Sun enters : Karkata (Sidereal) Jul. 16th, 28*h* 34*m*

Trop. Leo (♌) *:* Jul. 23rd, 8*h* 20*m*

New Moon : 2nd, 24h 46m

First Quarter : 9th, *16h 25m*

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.																					
	Mercury ☿			Venus ♀			Mars ♂			Jupiter ♃			Saturn ♄			Uranus ♅			Neptune ♆			Pluto ♇			Rahu ☊ (Mean)		
	8 naks.			5 naks.			8 naks.			18 naks.			20 naks.			1 naks.			25 naks.			21 naks.			7/20 naks.		
	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′
1	3	08	29	2	02	39	3	05	15	7	*R* 22	53	8	*R* 23	44	0	11	47	10	*R* 24	35	8	*R* 28	06	2	23	51
2	3	08	58	2	03	52	3	05	54	7	22	46	8	23	39	0	11	49	10	24	34	8	28	04	2	23	48
3	3	09	23	2	05	06	3	06	32	7	22	40	8	23	35	0	11	51	10	24	34	8	28	03	2	23	45
4	3	09	44	2	n	06	19	3	07	10	7	22	33	8	23	31	0	11	53	10	24	33	8	28	01	2	23	42
5	3	10	00	2	07	33	3	07	48	7	22	27	8	23	26	0	11	54	10	24	33	8	28	00	2	23	39
6	3	10	11	2	08	46	3	08	26	7	22	21	8	23	22	0	11	56	10	24	33	8	27	58	2	23	36
7	3	R	10	18	2	10	00	3	09	04	7	22	15	8	23	17	0	11	57	10	24	32	8	27	57	2	23	32
8	3	10	20	2	11	13	3	09	43	7	22	09	8	23	13	0	11	59	10	24	32	8	27	56	2	23	29
9	3	10	18	2	12	27	3	10	21	7	22	03	8	♂	23	09	0	12	01	10	24	31	8	27	54	2	23	26
10	3	10	11	2	13	40	3	10	59	7	21	58	8	23	04	0	12	03	10	24	31	8	27	53	2	23	23
11	3	*s*	09	59	2	14	54	3	s	11	37	7	21	52	8	23	00	0	12	04	10	24	30	8	27	51	2	23	20
12	3	09	42	2	16	07	3	12	15	7	21	47	8	22	55	0	12	06	10	24	29	8	27	50	2	23	17
13	3	09	22	2	17	21	3	12	53	7	21	42	8	22	51	0	12	07	10	24	29	8	27	48	2	23	13
14	3	08	57	2	18	34	3	13	31	7	21	37	8	22	47	0	12	09	10	24	28	8	♂	27	47	2	23	10
15	3	08	28	2	n	19	48	3	14	09	7	21	32	8	22	42	0	12	10	10	24	27	8	27	45	2	23	07
16	3	07	56	2	21	02	3	14	47	7	21	27	8	22	38	0	12	11	10	24	27	8	27	44	2	23	04
17	3	07	21	2	22	15	3	15	25	7	21	22	8	22	33	0	12	13	10	24	26	8	27	42	2	23	01
18	3	06	44	2	23	29	3	n	16	30	7	21	18	8	22	29	0	12	14	10	24	25	8	27	41	2	22	58
19	3	06	04	2	24	43	3	16	42	7	21	14	8	22	25	0	12	15	10	24	24	8	27	40	2	22	54
20	3	05	24	2	25	56	3	17	20	7	21	09	8	22	20	0	12	16	10	24	23	8	27	38	2	22	51
21	3	♂	04	43	2	27	10	3	17	58	7	21	05	8	22	16	0	12	17	10	24	22	8	27	36	2	22	48
22	3	04	02	2	28	24	3	18	36	7	21	02	8	22	12	0	12	18	10	24	21	8	27	35	2	22	45
23	3	*n*	03	22	2	*s*	29	38	3	19	14	7	20	58	8	22	08	0	12	19	10	24	21	8	27	34	2	22	42
24	3	02	43	3	00	51	3	19	52	7	20	55	8	22	03	0	12	20	10	24	20	8	27	32	2	22	38
25	3	02	07	3	02	05	3	20	30	7	20	51	8	21	59	0	12	21	10	24	19	8	27	31	2	22	35
26	3	01	34	3	n	03	19	3	21	08	7	20	48	8	21	55	0	12	22	10	24	18	8	27	29	2	22	31
27	3	01	04	3	04	33	3	21	46	7	20	45	8	21	51	0	12	23	10	24	17	8	27	28	2	22	29
28	3	00	39	3	05	47	3	22	24	7	20	42	8	21	47	0	12	24	10	24	15	8	27	27	2	22	26
29	3	*r*	00	19	3	07	00	3	23	02	7	20	40	8	21	43	0	12	24	10	24	14	8	27	25	2	22	22
30	3	00	03	3	08	14	3	23	40	7	20	37	8	21	39	0	12	25	10	24	13	8	27	24	2	22	19
31	2	29	53	3	09	28	3	24	18	7	20	35	8	21	35	0	12	26	10	24	12	8	27	22	2	22	16

Lunar Asadha Krishnadi (Sravana Vadi) begins from July 16, 27h 08m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	0 S 55	18 N 41	0 S 11	23 N 13	1 N 11	21 N 25	0 N 32	22 S 16	0 N 20	21 S 55	0 S 30	13 N 01	1 S 01	5 S 25
3	1 24	18 00	0 06	23 20	1 11	21 10	0 32	22 15	0 20	21 56	0 30	13 03	1 02	5 25
5	1 54	17 23	0 S 01	23 24	1 11	20 53	0 31	22 14	0 19	21 58	0 30	13 04	1 02	5 25
7	2 25	16 49	0 N 04	23 26	1 11	20 35	0 31	22 14	0 19	21 59	0 30	13 05	1 02	5 26
9	2 54	16 19	0 08	23 25	1 11	20 17	0 31	22 13	0 19	22 00	0 30	13 06	1 02	5 26
11	3 24	15 55	0 13	23 21	1 11	19 58	0 30	22 12	0 19	22 02	0 30	13 07	1 02	5 27
13	3 51	15 37	0 18	23 14	1 11	19 39	0 30	22 11	0 19	22 03	0 30	13 08	1 02	5 27
15	4 15	15 26	0 23	23 05	1 10	19 20	0 29	22 10	0 19	22 04	0 30	13 09	1 02	5 28
17	4 36	15 21	0 27	22 53	1 10	18 59	0 29	22 10	0 18	22 05	0 30	13 10	1 02	5 29
19	4 49	15 24	0 32	22 38	1 10	18 39	0 29	22 09	0 18	22 07	0 30	13 10	1 02	5 29
21	4 57	15 33	0 36	22 21	1 10	18 17	0 28	22 09	0 18	22 08	0 30	13 11	1 02	5 30
23	4 58	15 48	0 41	22 01	1 10	17 56	0 28	22 08	0 18	22 09	0 30	13 12	1 02	5 31
25	4 52	16 07	0 44	21 38	1 10	17 33	0 28	22 08	0 18	22 10	0 30	13 12	1 02	5 32
27	4 39	16 31	0 48	21 13	1 10	17 11	0 27	22 08	0 17	22 11	0 30	13 13	1 02	5 33
29	4 21	16 57	0 52	20 45	1 10	16 48	0 27	22 07	0 17	22 13	0 30	13 13	1 03	5 34
31	3 S 58	17 N 24	0 N 56	20 N 15	1 N 09	16 N 24	0 N 26	22 S 07	0 N 17	22 S 14	0 S 30	13 N 14	1 S 03	5 S 35

1st Jul. : Rahu Decli. 22°N 23'

1st Jul. Mean Ayanamsa: 24°07'46"

Full Moon : 16th, 27h 08m

Last Quarter : 25th, *6h 48m*

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
			h m s	8 Nakshatra s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			7/20 naks. s ° ′ ″
1 Th	213	10	8 38 21	3 14 21 43	18N08	3♂12 29 57	1 N 43	20N17	12 16	8	30	2 23 27 53
2 F	214	11	8 42 18	3 15 19 08	17 53	3 27 29 55	2 57	17 05	13 16	9	2	2 23 26 13
3 St	215	12	8 46 14	3n16 16 33	17 38	4 12 33 46	3 58	12 45	14 13	10	3	2 23 30 44
4 ♋	216	13	8 50 11	3 17 14 00	17 22	4 27 32 27	4 43	7 38	15 07	12	4	2 23 20 46
5 M	217	14	8 54 08	3 18 11 27	17 06	5 12 17 53	5 08	2N 10	16 00	13	5	2 23 17 51
6 Tu	218	15	8 58 04	3 19 08 54	16 50	5 26 44 06	5 13	3S 18	16 50	14	6	2 23 15 30
7 W	219	16	9 02 01	3 20 06 23	16 33	6 10 47 38	4 59	8 27	17 39	15	7	2 23 14 06
8 Th	220	17	9 05 57	3 21 03 52	16 17	6 24 27 32	4 29	13 02	18 21	16	8	2 23 13 50
9 F	221	18	9 09 54	3 22 01 22	16 00	7 07 44 48	3 44	16 52	19 20	17	9	2 23 14 38
10 St	222	19	9 13 50	3 22 58 53	15 42	7 20 41 43	2 49	19 46	20 12	18	10	2 23 16 09
11 ♋	223	20	9 17 47	3 23 56 24	15 25	9 03 21 14	1 47	21 38	21 03	19	11	2 23 17 49
12 M	224	21	9 21 43	3 24 53 56	15 07	8 15 46 28	0 N 41	22 23	21 55	20	12	2 23 19 01
13 Tu	225	22	9 25 40	3 25 51 30	14 49	8 28 00 24	0 S 26	22 02	22 45	21	13	2 23 19 11
14 W	226	23	9 29 37	3 26 49 04	14 31	9 10 05 39	1 30	20 40	23 33	—	14	2 23 17 50
15 Th	227	24	9 33 33	3 27 46 40	14 12	9♌22 04 29	2 30	18 22	—	22	15	2 23 14 47
16 F	228	25	9 37 30	3 28 44 17	13 54	10 03 58 52	3 23	15 19	0 19	23	16	2 23 10 05
17 St	229	26	9 41 26	3n29 41 54	13 35	10 15 50 39	4 07	11 39	1 04	24	17	2 23 04 02
18 ♋	230	27	9 45 23	4 00 39 34	13 15	10 27 41 39	4 40	7 32	1 46	25	18	2 22 57 10
19 M	231	28	9 49 19	4 01 37 15	12 56	11 09 33 54	5 01	3S 09	2 27	26	19	2 22 50 07
20 Tu	232	29	9 53 16	4 02 34 57	12 37	11 21 29 51	5 09	1N 23	3 09	27	—	2 22 43 37
21 W	233	30	9 57 12	4 03 32 41	12 17	0 03 32 22	5 04	5 54	3 50	1	20	2 22 38 18
22 Th	234	31	10 01 09	4 04 30 26	11 57	0 15 44 50	4 45	10 16	4 33	2	21	2 22 34 36
23 F	235	1	10 05 06	4 05 28 13	11 37	0 28 11 04	4 12	14 17	5 18	3	22	2 22 32 43
24 St	236	2	10 09 02	4 06 26 02	11 16	1 10 55 10	3 26	17 45	6 07	4	23	2 22 32 27
25 ♋	237	3	10 12 59	4 07 23 52	10 56	1 24 01 05	2 28	20 27	6 59	5	24	2 22 33 19
26 M	238	4	10 16 55	4 08 21 44	10 35	2 07 32 14	1 21	22 05	7 55	6	25	2 22 34 32
27 Tu	239	5	10 20 52	4 09 19 39	10 14	2 21 30 43	0 S 06	22 25	8 55	7	27	2 22 35 12
28 W	240	6	10 24 48	4 10 17 34	9 53	3 05 56 23	1N 11	21 18	9 56	8	28	2 22 34 28
29 Th	241	7	10 28 45	4 11 15 32	9 32	3 20 46 15	2 26	18 41	10 56	9	29	2 22 31 49
30 F	242	8	10 32 41	4 12 13 31	9 11	4♂05 54 04	3 31	14 46	11 56	10	30	2 22 27 05
31 St	243	9	10 36 38	4n13 11 31	8N 49	4 21 10 38	4 N 23	9N 50	12 53	11	1	2 22 20 36

Lunar Sravana Sukladi(Sudi) begins from August 1, 8h 42m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	12 06 24	11 02	11 53	12 49	20 13	22 27	5 39	2 41	5 08	18 18	5 31	18 42
3	12 06 12	10 55	11 55	12 47	20 05	22 18	5 32	2 33	5 09	18 16	5 32	18 41
5	12 06 00	10 51	11 58	12 44	19 57	22 10	5 24	2 25	5 09	18 15	5 32	18 40
7	12 05 48	10 48	12 00	12 41	19 49	22 01	5 16	2 17	5 10	18 14	5 33	18 38
9	12 05 30	10 47	12 02	12 38	19 41	21 53	5 08	2 09	5 11	18 13	5 34	18 37
11	12 05 18	10 48	12 04	12 35	19 33	21 45	5 00	2 01	5 12	18 11	5 35	18 36
13	12 05 00	10 50	12 06	12 32	19 25	21 36	4 52	1 53	5 13	18 10	5 36	18 34
15	12 04 36	10 54	12 08	12 29	19 17	21 28	4 45	1 45	5 13	18 09	5 36	18 33
17	12 04 12	10 59	12 09	12 26	19 10	21 20	4 37	1 37	5 14	18 07	5 37	18 31
19	12 03 42	11 05	12 11	12 23	19 02	21 12	4 29	1 29	5 15	18 05	5 38	18 29
21	12 03 12	11 12	12 13	12 20	18 54	21 03	4 21	1 21	5 16	18 04	5 39	18 28
23	12 02 48	11 20	12 14	12 17	18 47	20 55	4 13	1 13	5 16	18 02	5 39	18 26
25	12 02 12	11 27	12 16	12 14	18 39	20 47	4 05	1 05	5 17	18 00	5 40	18 24
27	12 01 42	11 35	12 17	12 11	18 32	20 39	3 57	0 56	5 18	17 59	5 41	18 22
29	12 01 00	11 43	12 19	12 08	18 24	20 31	3 49	0 48	5 18	17 57	5 41	18 20
31	12 00 30	11 50	12 20	12 04	18 17	20 23	3 41	0 40	5 19	17 55	5 42	18 19

Sun enters : Simha (Sidereal) Aug. 17th, 13*h* 02*m* *Trop. Virgo* (♍) : Aug. 23rd, 15*h* 32*m*

New Moon : 1st, 8h 42m First Quarter : 7th, *23h 01m*

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.									
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)	
	7 naks.	8 naks.	9 naks.	*18 naks.*	*20 naks.*	1 naks.	*25 naks.*	*21 naks.*	*7/20 naks.*	
	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	
1	2D29 49	3 10 42	3 24 57	7*R* 20 33	8*R* 21 31	0 12 26	10*R* 24 11	8*R* 27 21	2 22 13	1
2	2 29 51	3 11 56	3 25 35	7 20 31	8 21 27	0 12 27	10 24 10	8 27 20	2 22 10	2
3	3 00 00	3 13 10	3 26 13	7 20 30	8 21 23	0 12 27	10 24 09	8 27 18	2 22 07	3
4	3 00 15	3 14 24	3 26 51	7 20 28	8 21 19	0 12 28	10 24 07	8 27 17	2 22 03	4
5	3 00 36	3n15 38	3 27 29	7 20 27	8 21 16	0 12 28	10 24 06	8 27 16	2 22 00	5
6	3 01 03	3 16 52	3 28 07	7 20 26	8 21 12	0 12 28	10 24 05	8 27 14	2 21 57	6
7	3 01 38	3 18 06	3 28 45	7 20 25	8 21 08	0 12 29	10 24 04	8 27 13	2 21 54	7
8	3 02 18	3 19 20	3n29 23	7 20 24	8 21 05	0 12 29	10 24 02	8 27 12	2 21 51	8
9	3n03e 06	3 20 24	4 00 01	7 20 23	8 21 01	0 12 29	10 24 01	8 27 10	2 21 47	9
10	3 03 59	3 21 48	4 00 39	7 20 23	8 20 58	0 12 29	10 24 00	8 27 09	2 21 44	10
11	3 04 59	3 23 02	4 01 17	7D 20 23	8 20 55	0 12 29	10 23 58	8 27 08	2 21 41	11
12	3 06 04	3 24 17	4 01 55	7 20 23	8 20 51	0R12 29	10 23 57	8 27 06	2 21 38	12
13	3 07 16	3 25 31	4 02 33	7 20 23	8 20 48	0 12 29	10 23 55	8 27 05	2 21 35	13
14	3 08 33	3σ26 45	4 03 12	7 20 23	8 20 45	0 12 29	10 23 54	8 27 04	2 21 32	14
15	3 09 56	3 27 59	4 03 50	7 20 24	8 20 42	0 12 29	10 23 53	8 27 03	2 21 28	15
16	3 11 23	3n29 13	4 04 28	7 20 25	8 20 39	0 12 29	10 23 51	8 27 02	2 21 25	16
17	3 12 56	4 00 27	4 05 06	7 20 25	8 20 36	0 12 29	10 23 50	8 27 00	2 21 22	17
18	3 14 33	4 01 42	4 05 44	7 20 27	8 20 33	0 12 28	10 23 48	8 26 59	2 21 19	18
19	3n16 13	4 02 56	4 06 22	7 20 28	8 20 30	0 12 28	10 23 47	8 26 58	2 21 16	19
20	3 17 58	4 04 10	4 07 00	7 20 29	8 20 28	0 12 28	10 23 45	8 26 57	2 21 13	20
21	3 19 46	4 05 24	4 07 38	7 20 31	8 20 25	0 12 27	10 23 44	8 26 56	2 21 09	21
22	3 21 36	4 06 38	4 08 16	7 20 33	8 20 22	0 12 27	10 23 42	8 26 55	2 21 06	22
23	3 23 29	4 07 53	4 08 55	7 20 35	8 20 20	0 12 26	10 23 41	8 26 54	2 21 03	23
24	3 25 24	4 09 07	4 09 33	7 20 37	8 20 18	0 12 26	10 23 39	8 26 53	2 21 00	24
25	3s 27 20	4 10 21	4 10 11	7 20 39	8 20 15	0 12 25	10 23 38	8 26 52	2 20 57	25
26	3n29 18	4 11 36	4 10 49	7 20 42	8 20 13	0 12 25	10 23 36	8 26 51	2 20 53	26
27	4 01 16	4n12 50	4 11 27	7 20 45	8 20 11	0 12 24	10 23 34	8 26 50	2 20 50	27
28	4 03 15	4 14 04	4 12 05	7 20 47	8 20 09	0 12 23	10 23 33	8 26 49	2 20 47	28
29	4 05 14	4 15 19	4n12 44	7 20 50	8 20 07	0 12 22	10 23 31	8 26 48	2 20 44	29
30	4 07 13	4 16 33	4 13 22	7 20 54	8 20 05	0 12 21	10 23 30	8 26 47	2 20 41	30
31	4 09 11	4 17 47	4 14 00	7 20 57	8 20 03	0 12 21	10 23 28	8 26 46	2 20 38	31

Lunar Sravana Krishnadi (Bhadrapada Vadi) begins from August 15, 17h 59m
Lunar Bhadrapada Sukladi (Sudi) begins from August 30, 16h 07m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune		
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
1	3 S 44	17N38	0N58	19N59	1N09	16N12	0N26	22S 07	0N17	22S14	0 S 30	13N14	1 S 03	5 S 35	1
3	3 16	18 04	1 01	19 26	1 09	15 48	0 26	22 07	0 17	22 15	0 30	13 14	1 03	5 36	3
5	2 45	18 29	1 04	18 50	1 09	15 23	0 25	22 07	0 17	22 16	0 30	13 14	1 03	5 37	5
7	2 13	18 49	1 07	18 12	1 09	14 58	0 25	22 07	0 16	22 17	0 30	13 15	1 03	5 38	7
9	1 40	19 05	1 10	17 32	1 08	14 33	0 25	22 08	0 16	22 18	0 30	13 15	1 03	5 39	9
11	1 08	19 14	1 12	16 50	1 08	14 07	0 24	22 08	0 16	22 19	0 30	13 15	1 03	5 40	11
13	0 37	19 15	1 15	16 07	1 08	13 41	0 24	22 08	0 16	22 20	0 30	13 15	1 03	5 41	13
15	0 S 08	19 06	1 17	15 21	1 08	13 15	0 24	22 09	0 16	22 21	0 30	13 15	1 03	5 43	15
17	0N 18	18 48	1 19	14 34	1 07	12 48	0 23	22 09	0 15	22 22	0 30	13 14	1 03	5 44	17
19	0 41	18 18	1 20	13 45	1 07	12 21	0 23	22 10	0 15	22 23	0 30	13 14	1 03	5 45	19
21	1 01	16 38	1 22	12 55	1 07	11 53	0 22	22 11	0 15	22 24	0 31	13 14	1 03	5 46	21
23	1 17	16 47	1 23	12 03	1 07	11 26	0 22	22 12	0 15	22 24	0 31	13 14	1 03	5 47	23
25	1 30	15 46	1 24	11 10	1 06	10 58	0 22	22 12	0 15	22 25	0 31	13 13	1 03	5 49	25
27	1 39	14 36	1 25	10 16	1 06	10 29	0 21	22 13	0 14	22 26	0 31	13 13	1 03	5 50	27
29	1 44	13 19	1 25	9 21	1 06	10 01	0 21	22 14	0 14	22 26	0 31	13 12	1 03	5 51	29
31	1N 46	11N56	1N25	8N24	1N05	9N32	0N21	22S16	0N14	22S27	0 S 31	13N12	1 S 03	5 S 52	31

1st Aug. : Rahu Decli. 22°N 23' 1st Aug. Mean Ayanamsa : 24°07'50"

Full Moon*: *15th, 17h 59m **Last Quarter : 23rd, *20h 26m*** ***New Moon*: *30th, 16h 07m***

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T.						Moon ☽ M.Pass L.M.T.		Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
				Sun ☉ Longitude		Sun ☉ Decli.		Moon ☽ Longitude		Moon ☽ Lat.	Moon ☽ Decli.			
			h m s	11 Nakshatra s ° ′ ″		° ′		s ° ′ ″		° ′	° ′	h	m			7/20 naks. s ° ′ ″
1 ♋	244	10	10 40 35	4	14 09 34	8N	28	5	06 25 08	4N 55	4N18	13	47	12	2	2 22 13 04
2 M	245	11	10 44 31	4	15 07 38	8	06	5	21 26 56	5 06	1S25	14	40	13	4	2 22 05 29
3 Tu	246	12	10 48 28	4	16 05 43	7	44	6	06 07 29	4 57	6 55	15	32	14	5	2 21 58 50
4 W	247	13	10 52 24	4	17 03 50	7	22	6	20 21 23	4 30	11 53	16	24	16	6	2 21 53 52
5 Th	248	14	10 56 21	4	18 01 58	7	00	7	04 06 39	3 47	16 04	17	15	17	7	2 21 50 58
6 F	249	15	11 00 17	4	19 00 08	6	38	7	17 24 16	2 54	19 18	18	08	18	8	2 21 50 00
7 St	250	16	11 04 14	4	19 58 19	6	15	8	00 17 11	1 53	21 26	19	00	—	9	2 21 50 25
8 ♋	251	17	11 08 10	4	20 56 31	5	53	8	12 49 32	0N 48	22 27	19	52	19	10	2 21 51 18
9 M	252	18	11 12 07	4	21 54 45	5	30	8	25 05 51	0S 17	22 21	20	41	20	11	2 21 51 36
10 Tu	253	19	11 16 04	4	22 53 01	5	08	9	07 10 32	1 21	21 11	21	30	21	12	2 21 50 21
11 W	254	20	11 20 00	4	23 51 18	4	45	9	19 07 33	2 20	19 05	22	17	22	13	2 21 46 48
12 Th	255	21	11 23 57	4	24 49 37	4	22	10	01 00 11	3 13	16 10	23	01	23	—	2 21 40 30
13 F	256	22	11 27 53	4	n25 47 57	3	59	10	12 51 08	3 57	12 37	23	45	24	14	2 21 31 43
14 St	257	23	11 31 50	4	26 46 19	3	36	10	♍24 42 27	4 30	8 34	—		25	15	2 21 20 41
15 ♋	258	24	11 35 46	4	27 44 43	3	13	11	06 35 48	4 52	4S 11	0	27	26	16	2 21 08 16
16 M	259	25	11 39 43	4	28 43 09	2	50	11	18 32 34	5 01	0N 22	1	07	27	17	2 20 55 30
17 Tu	260	26	11 43 39	4	29 41 37	2	27	0	00 34 13	4 57	4 57	1	48	—	18	2 20 43 27
18 W	261	27	11 47 36	5	00 40 07	2	04	0	12 42 27	4 40	9 23	2	31	1	19	2 20 33 09
19 Th	262	28	11 51 33	5	01 38 39	1	41	0	24 59 25	4 09	13 30	3	15	2	20	2 20 25 19
20 F	263	29	11 55 29	5	02 37 14	1	18	1	07 27 51	3 26	17 06	4	01	3	21	2 20 20 16
21 St	264	30	11 59 26	5	03 35 50	0	54	1	20 11 00	2 32	19 59	4	52	4	22	2 20 17 47
22 ♋	265	31	12 03 22	5	04 34 29	0	31	2	03 12 25	1 29	21 55	5	45	5	23	2 20 17 11
23 M	266	1	12 07 19	5	05 33 10	0N	08	2	16 35 42	0 S	20 22	41	6	41	6	24	2 20 17 23
24 Tu	267	2	12 11 15	5	06 31 53	0 S	16	3	00 23 40	0N	53 22	05	7	41	7	25	2 20 17 08
25 W	268	3	12 15 12	5	07 30 38	0	39	3	14 37 42	2	05 20	05	8	38	8	26	2 20 15 15
26 Th	269	4	12 19 08	5	08 29 26	1	02	3	29 16 40	3	11 16	43	9	38	9	27	2 20 10 56
27 F	270	5	12 23 05	5	n09 28 16	1	26	4	14 16 15	4	04 12	12	10	35	11	28	6/20 03 54
28 St	271	6	12 27 01	5	10 27 08	1	49	4	♂29 28 48	4	42 6	51	11	31	12	30	2 19 54 30
29 ♋	272	7	12 30 58	5	11 26 02	2	13	5	14 44 03	4	59 1N	05	12	24	13	1	2 19 43 37
30 M	273	8	12 34 55	5	12 24 53	2 S	36	5	29 50 47	4 N	56 4S	43	13	18	14	2	2 19 32 30

Lunar Bhadrapada Krishnadi (Asvina Vadi) begins from September 14, 10h 03 m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages												Kolkata Sunrise (upper limb) I.S.T.		Kolkata Sunset (upper limb) I.S.T.		Central Station Sunrise (upper limb) I.S.T.		Central Station Sunset (upper limb) I.S.T.	
		☿		♀		♂		♃		♄		♅		♆									
	h m s	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
1	12 00 12	11	53	12	21	12	03	18	13	20	18	3	37	0	36	5	19	17	54	5	42	18	18
3	11 59 30	12	00	12	22	12	00	18	06	20	10	3	29	0	28	5	20	17	52	5	43	18	16
5	11 58 54	12	06	12	24	11	57	17	59	20	02	3	21	0	20	5	20	17	50	5	44	18	14
7	11 58 12	12	12	12	25	11	54	17	52	19	54	3	13	0	12	5	21	17	49	5	44	18	12
9	11 57 30	12	18	12	26	11	50	17	44	19	46	3	05	0	04	5	22	17	47	5	45	18	10
11	11 56 48	12	23	12	27	11	47	17	37	19	38	2	57	23	52	5	22	17	45	5	45	18	08
13	11 56 06	12	28	12	28	11	44	17	30	19	30	2	49	23	44	5	23	17	43	5	46	18	06
15	11 55 24	12	32	12	30	11	41	17	23	19	23	2	41	23	36	5	23	17	41	5	47	18	04
17	11 54 42	12	37	12	31	11	38	17	16	19	15	2	33	23	28	5	24	17	39	5	47	18	02
19	11 53 54	12	41	12	32	11	35	17	09	19	07	2	25	23	20	5	24	17	37	5	48	18	00
21	11 53 12	12	44	12	33	11	31	17	03	18	59	2	17	23	12	5	25	17	35	5	48	17	58
23	11 52 30	12	48	12	34	11	28	16	56	18	51	2	09	23	04	5	26	17	33	5	49	17	56
25	11 51 48	12	51	12	36	11	25	16	49	18	43	2	01	22	56	5	26	17	31	5	50	17	53
27	11 51 06	12	54	12	37	11	22	16	42	18	36	1	52	22	47	5	27	17	29	5	50	17	51
29	11 50 30	12	57	12	38	11	19	16	35	18	28	1	44	22	39	5	22	17	27	5	51	17	49
30	11 50 06	12	59	12	39	11	17	16	32	18	24	1	40	22	35	5	28	17	26	5	51	17	48

Sun enters : Kanya (Sidereal) Sep. 17th, 13*h* 03*m*. *Trop. Libra* (♎) : Sep. 23rd, 13*h* 20*m*

First Quarter *:* 6th, *8h 40m*

Full Moon **:** *14th, 10h 03m*

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.																							
	Mercury ☿			Venus ♀			Mars ♂			Jupiter ♃			Saturn ♄			Uranus ♅			Neptune ♆			Pluto ♇			Rahu ☊ (Mean)		
	10 naks.			11 naks.			11 naks.			18 naks.			*20 naks.*			*1 naks.*			*25 naks.*			*21 naks.*			*7/20 naks*		
	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′	s	°	′
1	4	11	10	4	19	02	4	14	38	7	21	01	8*R*	20	01	0*R*	12	20	10*R*	23	26	8*R*	26	45	2	20	34
2	4	n13	07	4	20	16	4	♂15	16	7	21	05	8	20	00	0	12	19	10	23	25	8	26	44	2	20	31
3	4	15	04	4	21	31	4	15	55	7	21	09	8	19	58	0	12	18	10	23	23	8	26	43	2	20	28
4	4	♂07	00	4	22	45	4	16	33	7	21	13	8	19	57	0	12	17	10	23	21	8	26	42	2	20	25
5	4	18	53	4	24	00	4	17	11	7	21	17	8	19	56	0	12	15	10	23	20	8	26	42	2	20	22
6	4	20	49	4	25	14	4	17	49	7	21	21	8	19	54	0	12	14	10	23	18	8	26	41	2	20	18
7	4	22	42	4	n26	28	4	18	28	7	21	26	8	19	53	0	12	13	10	23	16	8	n26	40	2	20	15
8	4	24	34	4	27	43	4	19	06	7	21	31	8	19	52	0	12	12	10	23	15	8	26	39	2	20	12
9	4	n26	24	4	r28	57	4	19	44	7	21	36	8	19	51	0	12	11	10	23	13	8	26	39	2	20	09
10	4	28	15	5	00	12	4	20	23	7	21	41	8	19	50	0	12	09	10	♃23	12	8	26	38	2	20	06
11	5	00	02	5	01	26	4	21	01	7	21	46	8	19	50	0	12	08	10	23	10	8	26	37	6/20	20	03
12	5	01	50	5	02	41	4	21	39	7	21	52	8	19	49	0	12	06	10	23	08	8	26	37	2	19	59
13	5	03	36	5	03	55	4	22	18	7	21	57	8	19	48	0	12	05	10	23	07	8	26	36	2	19	56
14	5	05	21	5	05	10	4	22	56	7	22	03	8	19	48	0	12	03	10	23	05	8	26	36	2	19	53
15	5	07	05	5	06	24	4	23	34	7	22	09	8	19	47	0	12	02	10	23	03	8	26	35	2	19	50
16	5	n08	48	5	07	29	4	24	13	7	22	15	8	19	47	0	12	00	10	23	02	8	26	35	2	19	47
17	5	10	29	5	n08	53	4	24	51	7	22	21	8	19	47	0	11	59	10	23	00	8	26	34	2	19	43
18	5	12	10	5	10	08	4	25	29	7	22	27	8	D19	47	0	11	57	10	22	58	8	26	34	2	19	40
19	5	13	50	5	11	22	4	n26	08	7	22	34	8	19	47	0	11	55	10	22	57	8	26	33	2	19	37
20	5	15	28	5	12	37	4	26	46	7	22	41	8	19	47	0	11	54	10	22	55	8	26	33	2	19	34
21	5	17	06	5	13	51	4	27	24	7	22	47	8	10	47	0	11	52	10	22	53	8	26	32	2	19	31
22	5	r18	43	5	15	06	4	28	03	7	22	54	8	19	48	0	11	50	10	22	52	8	26	32	2	19	28
23	5	20	18	5	16	20	4	28	41	7	23	01	8	19	48	0	11	48	10	22	50	8	26	32	2	19	24
24	5	n21	53	5	17	35	4	29	20	7	23	09	8	19	48	0	11	47	10	22	49	8	26	32	2	19	21
25	5	23	27	5	18	50	4	29	58	7	23	16	8	19	49	0	11	45	10	22	47	8	26	31	2	19	18
26	5	25	00	5	20	04	5	00	37	7	23	24	8	19	50	0	11	43	10	22	45	8	26	31	2	19	15
27	5	26	31	5	21	19	5	01	15	7	23	31	8	19	51	0	11	41	10	22	44	8	26	31	2	19	12
28	5	28	02	5	n22	33	5	01	54	7	23	39	8	19	51	0	11	39	10	22	42	8	26	31	2	19	09
29	5	29	32	5	23	48	5	02	32	7	23	47	8	19	52	0	11	37	10	22	41	8	26	30	2	19	05
30	6	01	01	5	25	02	5	03	11	7	23	55	8	19	54	0	11	35	10	22	39	8	26	30	2	19	02

Lunar Asvina Sukladi (Sudi) begins from September 28, 23h 56m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	1 N46	11N 13	1N 25	7N56	1N05	9N17	0N21	22S16	0N14	22S27	0 S 31	13N11	1 S 03	5 S53
3	1 44	9 44	1 25	6 58	1 05	8 48	0 20	22 17	0 14	22 28	0 31	13 10	1 03	5 54
5	1 40	8 12	1 24	5 59	1 04	8 19	0 20	22 19	0 13	22 28	0 31	13 10	1 03	5 56
7	1 34	6 39	1 23	5 00	1 04	7 49	0 19	22 20	0 13	22 29	0 31	13 09	1 03	5 57
9	1 26	5 04	1 22	4 00	1 03	7 20	0 19	22 21	0 13	22 29	0 31	13 08	1 03	5 58
11	1 16	3 29	1 21	3 00	1 03	6 50	0 19	22 23	0 13	22 30	0 31	13 07	1 03	6 00
13	1 05	1 54	1 20	2 00	1 03	6 20	0 18	22 24	0 13	22 30	0 31	13 06	1 04	6 01
15	0 54	0 N20	1 18	0N59	1 03	5 49	0 18	22 26	0 12	22 30	0 31	13 05	1 04	6 02
17	0 41	1S 13	1 16	0 S 02	1 02	5 19	0 18	22 27	0 12	22 30	0 31	13 04	1 04	6 04
19	0 27	2 44	1 13	1 04	1 02	4 48	0 18	22 29	0 12	22 31	0 31	13 03	1 04	6 05
21	0 14	4 14	1 11	2 05	1 01	4 18	0 17	22 30	0 12	22 31	0 31	13 02	1 04	6 06
23	0N 01	5 42	1 08	3 06	1 01	3 47	0 17	22 32	0 12	22 31	0 31	13 02	1 04	6 07
25	0S 15	7 08	1 05	4 07	1 00	3 16	0 17	22 34	0 11	22 31	0 31	12 59	1 04	6 09
27	0 30	8 32	1 02	5 07	1 00	2 45	0 16	22 36	0 11	22 31	0 31	12 58	1 04	6 10
29	0 45	9 53	0 59	6 08	0 59	2 14	0 16	22 37	0 11	22 31	0 31	12 57	1 04	6 11
30	0 S 52	10 S 33	0N57	6 S 38	0N59	1N58	0N16	22S38	0N11	22 S31	0 S 31	12N56	1 S 04	6 S12

1st Sept. : Rahu Decli. 22°N 30'

1st Sept. Mean Ayanamsa : 24°07'55"

Last Quarter : 22nd, *8h 11m*

New Moon* : *28th, 23h 56m

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
			h m s	13 Nakshatra s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			6/20 naks. s ° ′ ″
1 Tu	274	9	12 38 51	5 13 23 56	2S 59	6 14 38 55	4N 32	10S 07	14 12	15	3	2 19 22 24
2 W	275	10	12 42 48	5 14 22 56	3 22	6 29 01 11	3 52	14 49	15 05	16	4	2 19 14 20
3 Th	276	11	12 46 44	5 15 21 57	3 46	7 12 53 58	2 59	18 32	15 59	17	5	2 19 08 50
4 F	277	12	12 50 41	5 16 21 01	4 09	7 26 17 03	1 57	21 08	16 53	18	6	2 19 05 53
5 St	278	13	12 54 37	5 17 20 06	4 32	8 09 12 51	0N 52	22 32	17 46	19	7	2 19 04 53
6 ♋	279	14	12 58 34	5 18 19 13	4 55	8 21 45 28	0S 14	22 44	18 38	20	8	2 19 04 49
7 M	280	15	13 02 31	5 19 18 22	5 18	9 04 00 14	1 18	21 48	19 27	21	9	2 19 04 29
8 Tu	281	16	13 06 27	5 20 17 32	5 41	9 16 02 04	2 17	19 54	20 15	22	10	2 19 02 44
9 W	282	17	13 10 24	5 21 16 44	6 04	9 27 56 00	3 10	17 09	20 59	23	11	2 18 58 39
10 Th	283	18	13 14 20	5 22 15 59	6 27	10 09 46 23	3 54	13 42	21 43	24	12	2 18 51 43
11 F	284	19	13 18 17	5n23 15 15	6 49	10 21 36 51	4 27	9 44	22 25	25	13	2 18 41 55
12 St	285	20	13 22 13	5 24 14 53	7 12	11 03 30 13	4 50	5 22	23 07	—	14	2 18 29 41
13 ♋	286	21	13 26 10	5 25 13 52	7 34	11♌15 28 30	4 59	0S 47	23 47	26	15	2 18 15 50
14 M	287	22	13 30 06	5 26 13 14	7 57	11 27 33 06	4 56	3N 52	—	27	16	2 18 01 29
15 Tu	288	23	13 34 03	5 27 12 38	8 19	0 09 44 59	4 38	8 26	0 30	1	—	2 17 47 50
16 W	289	24	13 37 59	5 28 12 04	8 41	0 22 04 52	4 08	12 43	1 13	2	17	2 17 36 01
17 Th	290	25	13 41 56	5 29 11 32	9 04	1 04 33 43	3 25	16 31	2 00	3	18	2 17 26 51
18 F	291	26	13 45 53	6 00 11 03	9 25	1 17 12 45	2 32	19 38	2 49	4	19	2 17 20 45
19 St	292	27	13 49 49	6 01 10 35	9 47	2 00 03 45	1 30	21 49	3 42	5	20	2 17 17 33
20 ♋	293	28	13 53 46	6 02 10 10	10 09	2 13 08 55	0S 22	22 52	4 35	6	21	2 17 16 36
21 M	294	29	13 57 42	6 03 09 48	10 30	2 26 30 50	0N 49	22 39	5 32	7	22	2 17 16 47
22 Tu	295	30	14 01 39	6 04 09 27	10 52	3 10 11 51	1 58	21 06	6 29	8	24	2 17 16 49
23 W	296	1	14 05 35	6 05 09 09	11 13	3 24 13 29	3 03	18 13	7 26	9	25	2 17 15 28
24 Th	297	2	14 09 32	6n06 08 53	11 34	4 08 35 42	3 57	14 11	8 22	10	26	2 17 11 52
25 F	298	3	14 13 28	6 07 08 39	11 55	4 23 16 05	4 37	9 14	9 16	11	27	2 17 05 39
26 St	299	4	14 17 25	6 08 08 28	12 16	5 08 09 26	4 59	3N 40	10 09	12	28	2 16 57 07
27 ♋	300	5	14 21 22	6 09 08 19	12 36	5 23 08 00	5 00	2S 09	11 01	13	29	2 16 47 03
28 M	301	6	14 25 18	6 10 08 11	12 56	6♂08 02 30	4 42	7 49	11 55	15	30	2 16 36 36
29 Tu	302	7	14 29 15	6 11 08 06	13 16	6 22 43 42	4 04	12 57	12 48	16	1	2 16 27 00
30 W	303	8	14 33 11	6 12 08 03	13 36	7 07 03 56	3 12	17 15	13 44	17	3	2 16 19 15
31 Th	304	9	14 37 08	6 13 08 01	13S 56	7 20 58 23	2N 10	20S 27	14 39	18	4	2 16 13 56

Lunar Asvina Krishnadi (Kartika Vadi) begins from October 13, 26h 38m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	11 49 48	13 00	12 39	11 16	16 29	18 20	1 36	22 31	5 28	17 25	5 52	17 48
3	11 49 12	13 03	12 41	11 12	16 22	18 13	1 28	22 23	5 29	17 23	5 52	17 46
5	11 48 36	13 06	12 42	11 09	16 15	18 05	1 20	22 15	5 29	17 21	5 53	17 44
7	11 48 06	13 08	12 44	11 06	16 09	17 57	1 12	22 07	5 30	17 19	5 54	17 42
9	11 47 24	13 10	12 45	11 03	16 02	17 50	1 04	21 59	5 31	17 17	5 55	17 40
11	11 46 54	13 12	12 47	11 00	15 56	17 42	0 55	21 51	5 31	17 15	5 55	17 38
13	11 46 18	13 14	12 48	10 57	15 49	17 35	0 47	21 43	5 32	17 14	5 56	17 36
15	11 45 54	13 16	12 50	10 53	15 43	17 27	0 39	21 35	5 33	17 12	5 57	17 34
17	11 45 24	13 17	12 52	10 50	15 36	17 20	0 31	21 27	5 34	17 10	5 58	17 33
19	11 45 00	13 17	12 53	10 47	15 30	17 12	0 23	21 19	5 35	17 09	5 59	17 31
21	11 44 42	13 17	12 55	10 44	15 24	17 05	0 15	21 11	5 36	17 07	6 00	17 29
23	11 44 24	13 17	12 57	10 41	15 17	16 57	0 06	21 03	5 36	17 05	6 01	17 28
25	11 44 00	13 15	12 59	10 38	15 11	16 50	23 54	20 55	5 37	17 04	6 02	17 26
27	11 43 54	13 12	13 02	10 35	15 05	16 43	23 46	20 47	5 38	17 03	6 03	17 25
29	11 43 42	13 07	13 04	10 31	14 59	16 35	23 38	20 39	5 39	17 01	6 04	17 24
31	11 43 36	13 01	13 06	10 29	14 52	16 28	23 30	20 31	5 40	17 00	6 05	17 22

Sun enters : Tula (Sidereal) Oct. 17th, *25h 03m.* *Trop. Scorpio* (♏) : Oct. 23rd, *22h 50m*

First Quarter : 5th, *22h 17m* ***Full Moon : 13th, 26h 38m***

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.								
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)
	14 naks.	14 naks.	12 naks.	18 naks.	20 naks.	*1 naks.*	*25 naks.*	20 naks.	*6/20naks*
	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′
1	6 02 30	5 26 17	5 03 50	7 24 03	8 19 55	0*R*11 33	10*R*22 38	8*R* 26 30	2 18 59
2	6 03 57	5 27 32	5 04 28	7 24 12	8 19 56	0 11 31	10 22 36	8 26 30	2 18 56
3	6n05 23	5 28 46	5 05 07	7 24 20	8 19 57	0 11 28	10 22 35	8D 26 30	2 18 53
4	6 06 48	6 00 01	5 05 45	7 24 29	8 19 59	0 11 26	10 22 33	8 26 30	2 18 49
5	6 08 12	6 01 15	5 06 24	7 24 37	8 20 01	0 11 24	10 22 32	8 26 30	2 18 46
6	6 09 36	6 02 30	5 07 03	7 24 46	8 20 02	0 11 22	10 22 30	8 26 30	2 18 43
7	6 10 58	6 03 45	6 07 41	7 24 55	8 20 04	0 11 20	10 22 29	8 26 30	2 18 40
8	6 12 19	6 04 59	5 08 20	7 25 04	8 20 06	0 11 17	10 22 27	8 26 31	2 18 37
9	6 13 39	6n06 14	5 08 59	7 25 13	8 20 08	0 11 15	10 22 26	8 26 31	2 18 34
10	6 14 58	6 07 28	5n 09 37	7 25 23	8 20 10	0 11 13	10 22 25	8 26 31	2 18 30
11	6 16 15	6 08 43	5 10 16	7 25 32	8 20 12	0 11 11	10 22 23	8 26 31	2 18 27
12	6 17 31	6 09 57	5 10 54	7 25 42	8 20 14	0 11 08	10 22 22	8 26 31	2 18 24
13	6 18 46	6 11 12	5 r 11 33	7 25 51	8 20 17	0 11 06	10 22 21	8 26 32	2 18 21
14	6n19 59	6 12 27	5 12 12	7 26 01	8 20 19	0 11 04	10 22 19	8 26 32	2 18 18
15	6 21 11	6 13 41	5 12 51	7 26 11	8 20 22	0 11 01	10 22 18	8 26 32	2 18 14
16	6 22 20	6 14 56	5 13 30	7 26 21	8 20 24	0 10 59	10 22 17	8 26 33	2 18 11
17	6 23 28	6 16 10	5 14 08	7 26 31	8 20 27	0 10 57	10 22 15	8 26 33	2 18 08
18	6 24 34	6 17 25	5 14 47	7 26 41	8 20 30	0 10 54	10 22 14	8 26 33	2 18 05
19	6 25 38	6 18 39	5 15 26	7 26 51	8 20 33	0 10 52	10 22 13	8 26 34	2 18 02
20	6e26 39	6n19 54	5 16 05	7 27 02	8 20 36	0 10 49	10 22 12	8 26 34	2 17 59
21	6 27 37	6 21 09	5 16 44	7 27 12	8 20 39	0 10 47	10 22 11	8 26 35	2 17 55
22	6 28 32	6 22 23	5 17 23	7 27 23	8 20 42	0 10 44	10 22 10	8 26 35	2 17 52
23	6 29 24	6 23 38	5 18 02	7 27 33	8 20 45	0 10 42	10 22 08	8 26 36	2 17 49
24	7 00 12	6 24 52	5 18 41	7 27 44	8 20 48	0 10 39	10 22 07	8 26 37	2 17 46
25	7 00 57	6 26 07	5 19 20	7 27 55	8 20 52	0 10 37	10 22 06	8 26 37	2 17 43
26	7 01 36	6 27 21	5 19 59	7 28 06	8 20 55	0 10 35	10 22 05	8 26 38	2 17 39
27	7 02 11	6 28 36	5 20 38	7 28 17	8 20 59	0 10 32	10 22 04	8 26 38	2 17 36
28	7 02 40	6 29 51	5 21 17	7 28 28	8 21 03	0♌10 30	10 22 03	8 26 39	2 17 33
29	7 03 03	7 01 05	5 21 56	7 28 39	8 21 06	0 10 27	10 22 02	8 n26 40	2 17 30
30	7n03 20	7n 02 20	5 22 35	7 28 51	8 21 10	0 10 25	10 22 01	8 26 41	2 17 27
31	7R 03 29	7 03 34	5n 23 14	7 29 02	8 21 14	0 10 22	10 22 00	8 26 42	2 17 24

Lunar Kartika Sukladi (Sudi) begins from October 28,9h 08m

Date	☿Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	°	° ′	°
1	1 S 00	11S 12	0N55	7S07	0N59	1 N43	0N16	22S39	0N11	22S31	0 S 31	12N55	1 S 04	6S12
3	1 14	12 27	0 51	8 07	0 58	1 12	0 15	22 41	0 11	22 31	0 31	12 54	1 04	6 13
5	1 29	13 40	0 47	9 05	0 58	0 41	0 15	22 43	0 10	22 31	0 31	12 53	1 04	6 15
7	1 43	14 50	0 43	10 03	0 57	0N 09	0 15	22 44	0 10	22 31	0 31	12 51	1 03	6 16
9	1 56	15 56	0 39	10 59	0 57	0S 22	0 15	22 46	0 10	22 30	0 31	12 50	1 03	6 17
11	2 09	16 58	0 34	11 55	0 56	0 53	0 14	22 48	0 10	22 30	0 31	12 48	1 03	6 18
13	2 21	17 56	0 30	12 50	0 56	1 24	0 14	22 49	0 10	22 30	0 31	12 46	1 03	6 19
15	2 32	18 50	0 25	13 43	0 55	1 56	0 14	22 51	0 09	22 30	0 31	12 45	1 03	6 20
17	2 42	19 40	0 20	14 35	0 54	2 27	0 14	22 53	0 09	22 29	0 31	12 43	1 03	6 21
19	2 50	20 24	0 15	15 26	0 54	2 58	0 13	22 55	0 09	22 29	0 31	12 42	1 03	6 22
21	2 57	21 03	0 10	16 15	0 53	3 29	0 13	22 56	0 09	22 28	0 31	12 40	1 03	6 23
23	3 02	21 35	0 05	17 02	0 53	4 00	0 13	22 58	0 09	22 28	0 31	12 38	1 03	6 23
25	3 04	22 00	0N00	17 48	0 52	4 31	0 12	22 59	0 09	22 27	0 31	12 37	1 03	6 24
27	3 03	22 17	0 S 05	18 32	0 51	5 01	0 12	23 01	0 08	22 26	0 31	12 35	1 03	6 25
29	2 58	22 25	0 10	19 14	0 51	5 32	0 12	23 02	0 08	22 26	0 31	12 34	1 03	6 26
31	2 S 49	22S22	0 S 15	19S54	0N50	6S 03	0N12	23S04	0N08	22S25	0 S 31	12N32	1 S 03	6S26

1st Oct.: Rahu Decli. 22°N 49'

1st Oct. Mean Ayanamsa : 24°07'59"

Last Quarter : 21st, *18h 09m*

New Moon :28th, 9h 08m

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
				15 Nakshatra								6/20 naks.
			h m s	s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			s ° ′ ″
1 F	305	10	14 41 04	6 14 08 01	14S 16	8 04 25 15	1 N 02	22S 23	15 35	19	5	2 16 11 01
2 St	306	11	14 45 01	6 15 08 03	14 35	8 17 25 29	0 S 07	23 03	16 27	20	6	2 16 10 25
3 ☽	307	12	14 48 57	6 16 08 06	14 54	9 00 02 10	1 13	22 29	17 21	21	7	2 16 10 56
4 M	308	13	14 52 54	6 17 08 11	15 12	9 12 19 43	2 15	20 50	18 10	22	8	2 16 11 39
5 Tu	309	14	14 56 51	6 18 08 18	15 31	9 24 23 13	3 10	18 17	18 56	—	—	2 16 11 33
6 W	310	15	15 00 47	6n19 08 26	15 49	10 06 17 56	3 55	14 59	19 40	23	9	2 16 09 49
7 Th	311	16	15 04 44	6 20 08 36	16 07	10 18 08 52	4 30	11 07	20 22	24	10	2 16 05 55
8 F	312	17	15 08 40	6 21 08 47	16 25	11 00 00 33	4 54	6 50	21 04	25	11	2 15 59 43
9 St	313	18	15 12 37	6 22 09 00	16 42	11 11 56 46	5 05	2 S 15	21 44	26	12	2 15 51 31
10 ☽	314	19	15 16 33	6 23 09 14	16 59	11 24 00 30	5 02	2N 27	22 27	27	13	2 15 41 54
11 M	315	20	15 20 30	6 24 09 31	17 16	0 06 13 51	4 46	7 07	23 11	1	14	2 15 31 44
12 Tu	316	21	15 24 26	6 25 09 48	17 33	0♌18 38 01	4 16	11 36	—	2	15	2 15 21 58
13 W	317	22	15 28 23	6 26 10 07	17 49	1 01 13 34	3 33	15 39	23 56	3	16	2 15 13 31
14 Th	318	23	15 32 20	6 27 10 28	18 05	1 14 00 32	2 39	19 02	0 45	4	17	2 15 07 05
15 F	319	24	15 36 16	6 28 10 51	18 21	1 26 58 51	1 36	21 33	1 34	5	18	2 15 03 01
16 St	320	25	15 40 13	6 29 11 16	18 36	2 10 08 22	0 S 26	22 56	2 31	6	19	2 15 01 17
17 ☽	321	26	15 44 09	7 00 11 42	18 51	2 23 29 19	0N 46	23 02	3 28	7	20	2 15 01 24
18 M	322	27	15 48 06	7 01 12 11	19 06	3 07 02 06	1 56	21 47	4 24	8	21	2 15 02 35
19 Tu	323	28	15 52 02	7 02 12 41	19 20	3 20 47 15	3 01	19 15	5 22	9	22	2 15 03 51
20 W	324	29	15 55 59	7n03 13 13	19 34	4 04 45 07	3 57	15 34	6 15	10	23	2 15 04 19
21 Th	325	30	15 59 55	7 04 13 46	19 48	4 18 55 16	4 39	10 57	7 08	11	24	2 15 03 17
22 F	326	1	16 03 12	7 05 14 22	20 01	5 03 16 06	5 04	5 41	7 59	12	25	2 15 00 28
23 St	327	2	16 07 49	7 06 14 59	20 14	5 17 44 29	5 10	0 N 04	8 50	13	26	2 14 56 01
24 ☽	328	3	16 11 45	7 07 15 39	20 26	6 02 15 42	4 56	5 S 35	9 42	14	28	2 14 50 26
25 M	329	4	16 15 42	7 08 16 19	20 38	6 16 43 50	4 23	10 54	10 34	15	29	2 14 44 30
26 Tu	330	5	16 19 38	7 09 17 01	20 50	7♂01 02 35	3 35	15 35	11 27	16	30	2 14 39 01
27 W	331	6	16 23 35	7 10 17 45	21 01	7 15 06 11	2 34	19 18	12 23	17	1	2 14 34 42
28 Th	332	7	16 27 31	7 11 18 30	21 12	7 28 50 13	1 25	21 50	13 20	18	2	2 14 31 58
29 F	333	8	16 13 28	7 12 19 16	21 23	8 12 12 14	0N 13	23 04	14 16	19	3	2 14 30 56
30 St	334	9	16 35 24	7 13 20 03	21S 33	8 25 11 47	0 S 58	23 S 00	15 09	20	4	2 14 31 20

Lunar Kartika Krishnadi (Margasira Vadi) begins from November 12, 19h 04m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	11 43 36	12 57	13 07	10 27	14 49	16 24	23 26	20 27	5 41	16 59	6 05	17 22
3	11 43 30	12 47	13 10	10 24	14 43	16 17	23 17	20 19	5 42	16 58	6 06	17 21
5	11 43 36	12 34	13 12	10 21	14 37	16 10	23 09	20 11	5 43	16 57	6 08	17 19
7	11 43 36	12 20	13 15	10 18	14 31	16 03	23 01	20 03	5 44	16 56	6 09	17 18
9	11 43 48	12 03	13 17	10 15	14 25	15 56	22 53	19 55	5 45	16 55	6 10	17 16
11	11 43 54	11 45	13 20	10 12	14 18	15 48	22 45	19 47	5 47	16 54	6 11	17 17
13	11 44 12	11 28	13 23	10 09	14 12	15 41	22 37	19 40	5 48	16 54	6 12	17 16
15	11 44 30	11 12	13 26	10 06	14 06	15 34	22 28	19 32	5 49	16 53	6 14	17 15
17	11 44 48	10 58	13 29	10 03	14 00	15 27	22 20	19 24	5 50	16 52	6 15	17 15
19	11 45 12	10 47	13 32	10 00	13 54	15 20	22 12	19 16	5 52	16 52	6 16	17 14
21	11 45 42	10 39	13 35	9 57	13 48	15 13	22 04	19 08	5 53	16 51	6 18	17 14
23	11 46 12	10 34	13 38	9 55	13 42	15 06	21 56	19 00	5 54	16 51	6 19	17 13
25	11 46 48	10 30	13 40	9 52	13 36	14 59	21 48	18 52	5 56	16 51	6 20	17 13
27	11 47 24	10 29	13 44	9 49	13 30	14 52	21 40	18 44	5 57	16 51	6 22	17 13
29	11 48 06	10 29	13 47	9 46	13 24	14 45	21 31	18 36	5 58	16 51	6 23	17 13
30	11 48 24	10 29	13 48	9 45	13 21	14 41	21 27	18 32	5 59	16 51	6 24	17 13

Sun enters : Vriscika (Sidereal) Nov. 16th, 24h 51m. *Trop. Sagittarius* (♐) : Nov. 22nd, 20h 29m

First Quarter : 4th, *15h 53m*

Full Moon : 12th, 19h 04m

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.								
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)
	17 naks. s ° ′	17 naks. s ° ′	14 naks. s ° ′	18 naks. s ° ′	20 naks. s ° ′	*1 naks.* s ° ′	*25 naks.* s ° ′	21 naks. s ° ′	*6/20 naks.* s ° ′
1	7*R* 03 30	7 04 49	5 23 53	7 29 13	8 21 18	0*R*10 20	10*R*22 00	8 26 42	2 17 20
2	7*n* 03 23	7 06 03	5 24 32	7 29 25	8 21 22	0 10 17	10 21 59	8 26 43	2 17 17
3	7 03 06	7 07 18	5 25 11	7 29 37	8 21 26	0 10 15	10 21 58	8 26 44	2 17 14
4	7*s* 02 41	7 08 33	5 25 50	7n29 48	8 21 31	0 10 12	10 21 57	8 26 45	2 17 11
5	7 02 05	7 09 47	5 26 29	8 00 00	8 21 35	0 10 10	10 21 56	8 26 46	2 17 08
6	7 01 20	7 11 02	5 27 09	8 00 12	8 21 39	0 10 08	10 21 56	8 26 47	2 17 05
7	7 00 26	7 12 16	5 27 48	8 00 24	8 21 44	0 10 05	10 21 55	8 26 48	2 17 01
8	6 29 24	7 13 31	5 28 27	8 00 36	8 21 48	0 10 03	10 21 54	8 26 49	2 16 58
9	6 28 14	7 14 45	5 29 06	8 00 48	8 21 53	0 10 00	10 21 54	8 26 50	2 16 55
10	6 26 58	7n16 00	5 29 45	8 01 00	8 21 58	0 09 58	10 21 53	8 26 51	2 16 52
11	6♌25 39	7 17 14	6 00 25	8 01 12	8 22 02	0 09 56	10 21 52	8 26 52	2 16 49
12	6 24 19	7 18 29	6 01 04	8 01 25	8 22 07	0 09 53	10 21 52	8 26 53	2 16 45
13	6 23 01	7 19 43	6 01 43	8 01 37	8 22 12	0 09 51	10 21 51	8 26 54	2 16 42
14	6 21 47	7 20 58	6 02 23	8 01 49	8 22 17	0 09 49	10 21 51	8 26 56	2 16 39
15	6*n* 20 39	7 22 12	6 03 02	8 02 02	8 22 22	0 09 46	10 21 51	8 26 57	2 16 36
16	6*r* 19 40	7 23 26	6 03 41	8 02 14	8 22 27	0 09 44	10 21 50	8 26 58	2 16 33
17	6 18 50	7 24 41	6 04 21	8 02 27	8 22 32	0 09 42	10 21 50	8 26 59	2 16 30
18	6 18 12	7 25 55	6 05 00	8 02 40	8 22 38	0 09 39	10 21 49	8 27 01	2 16 26
19	6 17 46	7 27 10	6 05 40	8 02 52	8 22 43	0 09 37	10 21 49	8 27 02	2 16 23
20	6D17 31	7 28 24	6n06 19	8 03 05	8 22 48	0 09 35	10 21 49	8 27 03	2 16 20
21	6 17 28	7n29 39	6 06 59	8 03 18	8 22 54	0 09 33	10 21 49	8 27 04	2 16 17
22	6 17 35	8 00 53	6 07 38	8 03 31	8 22 59	0 09 31	10 21 48	8 27 06	2 16 14
23	6 17 53	8 02 08	6 08 18	8 03 44	8 23 05	0 09 28	10 21 48	8 27 07	2 16 10
24	6 18 20	8 03 22	6 08 57	8 03 57	8 23 10	0 09 26	10 21 48	8 27 09	2 16 07
25	6 18 55	8 04 36	6 09 37	8 04 10	8 23 16	0 09 24	10 21 48	8 27 10	2 16 04
26	6 n19 38	8 05 51	6 10 16	8 04 23	8 23 22	0 09 22	10 21 48	8 27 12	2 16 01
27	6 20 28	8 07 05	6 10 56	8 04 36	8 23 28	0 09 20	10D21 48	8 27 13	2 15 58
28	6e 21 33	8 08 20	6 11 36	8 04 49	8 23 33	0 09 18	10 21 48	8 27 15	2 15 55
29	6 22 24	8 09 34	6 12 15	8 05 02	8 23 39	0 09 16	10 21 48	8 27 16	2 15 51
30	6 23 29	8 10 48	6 12 56	8 05 15	8 23 45	0 09 14	10 21 48	8 27 18	2 15 48

Lunar Margasirsa Sukladi (Sudi) begins from November 26, 20h 36m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	2S 42	22S16	0S 18	20S13	0N50	6S18	0N12	23S 05	0N08	22 S25	0S 31	12N31	1S 03	6S 27
3	2 24	21 53	0 23	20 49	0 49	6 48	0 11	23 06	0 08	22 24	0 31	12 29	1 03	6 27
5	2 00	21 15	0 28	21 24	0 48	7 18	0 11	23 07	0 08	22 23	0 31	12 28	1 03	6 28
7	1 29	20 21	0 34	21 56	0 48	7 48	0 11	23 08	0 07	22 22	0 31	12 26	1 03	6 28
9	0 53	19 12	0 39	22 25	0 47	8 18	0 11	23 10	0 07	22 21	0 31	12 25	1 03	6 29
11	0S 12	17 52	0 44	22 52	0 46	8 48	0 10	23 11	0 07	22 20	0 31	12 23	1 03	6 29
13	0N 29	16 29	0 49	23 16	0 45	9 17	0 10	23 12	0 07	22 19	0 31	12 22	1 03	6 30
15	1 07	15 12	0 54	23 37	0 45	9 46	0 10	23 13	0 07	22 18	0 31	12 20	1 03	6 30
17	1 38	14 10	0 58	23 56	0 44	10 15	0 10	23 14	0 07	22 17	0 31	12 18	1 03	6 30
19	2 02	13 28	1 03	24 12	0 43	10 44	0 10	23 15	0 06	22 16	0 31	12 17	1 03	6 30
21	2 18	13 07	1 08	24 25	0 42	11 12	0 09	23 15	0 06	22 15	0 31	12 16	1 03	6 30
23	2 27	13 07	1 12	24 35	0 41	11 40	0 09	23 16	0 06	22 14	0 31	12 14	1 03	6 31
25	2 29	13 23	1 16	24 42	0 40	12 08	0 09	23 17	0 06	22 12	0 31	12 13	1 03	6 31
27	2 27	13 53	1 20	24 46	0 40	12 35	0 09	23 17	0 06	22 11	0 31	12 11	1 03	6 31
29	2 21	14 32	1 24	24 47	0 39	13 02	0 09	23 17	0 06	22 10	0 31	12 10	1 02	6 31
30	2 N16	14S 54	1 S 26	24 S47	0N38	13S16	0N08	23 S18	0N06	22 S09	0 S 31	12N09	1 S 02	6S 31

1st Nov. : Rahu Decli. 23°N 05'

1st Nov. Mean Ayanamsa :24°08'03"

Last Quarter :19th, *26h 41m*

New Moon : 26th, 20h 36m

Date	Day of year	Indian Date	Sidereal Time (Noon)	At 0h U.T. or 5-30 a.m. I.S.T. Sun ☉ Longitude	Sun ☉ Decli.	Moon ☽ Longitude	Moon ☽ Lat.	Moon ☽ Decli.	Moon ☽ M.Pass. L.M.T.	Nakshatra	Tithi	Moon's Node ☊ Rahu (True)
			h m s	17 Nakshatra s ° ′ ″	° ′	s ° ′ ″	° ′	° ′	h m			6/20 naks. s ° ′ ″
1 ☃	335	10	16 39 21	7 14 20 51	21 S 43	9 07 50 18	2 S 04	21 S 44	16 01	21	5	2 14 32 44
2 M	336	11	16 43 18	7 15 21 41	21 52	9 20 10 43	3 03	19 27	16 50	22	6	2 14 34 30
3 Tu	337	12	16 47 14	7n16 22 31	22 01	10 02 17 03	3 52	16 21	17 36	23	7	2 14 36 04
4 W	338	13	16 51 11	7 17 23 22	22 10	10 14 13 55	4 31	12 37	18 18	24	8	2 14 36 54
5 Th	339	14	16 55 07	7 18 24 14	22 18	10 26 06 14	4 58	8 26	19 00	25	9	2 14 36 41
6 F	340	15	16 59 04	7 19 25 07	22 25	11 07 58 52	5 12	3 S 56	19 40	26	—	2 14 35 18
7 St	341	16	17 03 00	7 20 26 01	22 33	11 19 56 28	5 13	0 N 44	20 21	27	10	2 14 32 51
8 ☃	342	17	17 06 57	7 21 26 55	22 39	0 02 03 04	4 59	5 27	21 05	1	11	2 14 29 36
9 M	343	18	17 10 53	7 22 27 50	22 46	0 14 22 01	4 32	10 02	21 49	2	12	2 14 25 59
10 Tu	344	19	17 14 50	7 23 28 46	22 52	0 26 55 41	3 52	14 17	22 37	—	13	2 14 22 27
11 W	345	20	17 18 47	7 24 29 43	22 57	1 09 45 23	2 59	18 00	23 27	3	14	2 14 19 26
12 Th	346	21	17 22 43	7 25 30 41	23 02	1♌22 51 22	1 55	20 53	—	4	15	2 14 17 16
13 F	347	22	17 26 40	7 26 31 39	23 06	2 06 12 53	0 S 44	22 42	0 23	5	16	2 14 16 07
14 St	348	23	17 30 36	7 27 32 39	23 10	2 19 48 18	0 N 31	23 13	1 22	6	17	2 14 15 58
15 ☃	349	24	17 34 33	7 28 33 39	23 14	3 03 35 32	1 45	22 20	2 19	8	18	2 14 16 35
16 M	350	25	17 38 29	7n29 34 40	23 17	3 17 32 09	2 54	20 04	3 16	9	19	2 14 17 38
17 Tu	351	26	17 42 26	8 00 35 42	23 20	4 01 35 45	3 53	16 36	4 12	10	21	2 14 18 44
18 W	352	27	17 46 22	8 01 36 45	23 22	4 15 44 00	4 38	12 10	5 05	11	22	2 14 19 34
19 Th	353	28	17 50 19	8 02 37 49	23 24	4 29 54 46	5 07	7 04	5 57	12	23	2 14 19 54
20 F	354	29	17 54 16	8 03 38 54	23 25	5 14 05 55	5 17	1 N 35	6 47	13	24	2 14 19 40
21 St	355	30	17 58 12	8 04 40 00	23 26	5 28 15 16	5 07	3 S 57	7 37	14	25	2 14 18 57
22 ☃	356	1	18 02 09	8 05 41 07	23 26	6 12 20 22	4 40	9 16	8 26	15	26	2 14 17 58
23 M	357	2	18 06 05	8 06 42 14	23 26	6 26 18 42	3 56	14 04	9 18	16	27	2 14 16 56
24 Tu	358	3	18 10 02	8 07 43 22	23 25	7 10 07 31	2 58	18 04	10 11	17	28	2 14 16 03
25 W	359	4	18 13 58	8 08 44 31	23 24	7 23 44 12	1 51	21 02	11 06	18	29	2 14 15 27
26 Th	360	5	18 17 55	8 09 45 40	23 23	8♌07 06 34	0 N 40	22 46	12 03	19	30	2 14 15 11
27 F	361	6	18 21 51	8 10 46 50	23 21	8 20 13 01	0 S 33	23 13	12 57	20	1	2 14 15 11
28 St	362	7	18 25 48	8 11 47 59	23 18	9 03 02 56	1 42	22 24	13 50	21	2	2 14 15 21
29 ☃	363	8	18 29 45	8n12 49 10	23 15	9 15 36 41	2 45	20 27	14 40	22	3	2 14 15 32
30 M	364	9	18 33 41	8 13 50 20	23 12	9 27 55 45	3 39	17 37	15 28	23	4	2 14 15 39
31 Tu	365	10	18 37 38	8 14 51 30	23 S 08	10 10 02 33	4 S 23	14 S 03	16 13	24	5	2 14 15 39
32 W	366	11	18 41 34	8 15 52 40	23 S 03	10 22 00 23	4 S 54	9 S 59	16 54	25	6	2 14 15 34

Lunar Margasirsa Krishnadi (Pausa Vadi) begins from December 12, 10h 42m

Date	Apparent Noon L.M.T.	Local mean time of Meridian passages ☿	♀	♂	♃	♄	♅	♆	Kolkata Sunrise (upper limb) I.S.T.	Kolkata Sunset (upper limb) I.S.T.	Central Station Sunrise (upper limb) I.S.T.	Central Station Sunset (upper limb) I.S.T.
	h m s	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	11 48 48	10 30	13 50	9 43	13 18	14 37	21 23	18 29	5 59	16 51	6 25	17 13
3	11 49 36	10 32	13 53	9 41	13 12	14 30	21 15	18 21	6 01	16 51	6 26	17 13
5	11 50 24	10 34	13 56	9 38	13 07	14 24	21 07	18 13	6 02	16 51	6 27	17 14
7	11 51 12	10 38	13 59	9 35	13 01	14 17	20 59	18 05	6 03	16 52	6 29	17 14
9	11 52 06	10 41	14 02	9 33	12 55	14 09	20 51	17 57	6 05	16 52	6 30	17 15
11	11 53 00	10 45	14 05	9 30	12 49	14 03	20 43	17 49	6 06	16 53	6 31	17 15
13	11 53 54	10 49	14 07	9 27	12 43	13 56	20 35	17 42	6 07	16 53	6 32	17 16
15	11 54 48	10 54	14 10	9 25	12 37	13 49	20 27	17 34	6 08	16 54	6 34	17 16
17	11 55 48	10 59	14 13	9 22	12 31	13 42	20 19	17 26	6 09	16 55	6 35	17 17
19	11 56 48	11 04	14 15	9 20	12 25	13 35	20 11	17 18	6 11	16 56	6 36	17 18
21	11 57 48	11 09	14 18	9 17	12 19	13 28	20 03	17 11	6 12	16 57	6 37	17 19
23	11 58 48	11 14	14 20	9 15	12 14	13 21	19 55	17 03	6 13	16 58	6 38	17 20
25	11 59 48	11 20	14 23	9 12	12 08	13 14	19 47	16 55	6 13	16 59	6 39	17 21
27	12 00 48	11 26	14 25	9 10	12 02	13 07	19 39	16 47	6 14	17 00	6 40	17 22
29	12 01 48	11 31	14 27	9 08	11 56	13 00	19 31	16 40	6 15	17 01	6 40	17 23
31	12 02 42	11 37	14 29	9 05	11 50	12 54	19 23	16 32	6 16	17 02	6 41	17 25
32	12 03 12	11 40	14 30	9 04	11 47	12 50	19 19	16 28	6 16	17 03	6 41	17 25

Sun enters : Dhanus (Sidereal) Dec. 16th, 15*h* 28*m* *Trop. Capricorn* (♑) : Dec. 22nd, 9*h* 49*m*

First Quarter : 4th, *12h 28m* *Full Moon : 12th, 10h 42m*

Date	*Nirayana* Longitudes at 0h U.T. or 5-30 a.m. I.S.T.									
	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu ☊ (Mean)	
	16 naks.	19 naks.	15 naks.	19 naks.	20 naks.	*1 naks.*	25 naks.	21 naks.	*6/20 naks.*	
	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	
1	6 24 38	8 12 03	6 13 35	8 05 29	8 23 51	0*R* 09 12	10 21 48	8 27 19	2 15 45	1
2	6 25 50	8n 13 17	6 14 14	8 05 42	8 23 57	0 09 11	10 21 48	8 27 21	2 15 42	2
3	6 27 06	8 14 31	6 14 54	8 05 55	8 24 03	0 09 09	10 21 48	8 27 22	2 15 39	3
4	6 28 23	8 15 46	6 15 34	8 06 09	8 24 09	0 09 07	10 21 48	8 27 24	2 15 35	4
5	6 29 43	8 17 00	6 16 13	8 06 22	8 24 16	0 09 05	10 21 49	8 27 26	2 15 32	5
6	7 01 04	8 18 14	6 16 53	8 06 36	8 24 22	0 09 03	10 21 49	8 27 27	2 15 29	6
7	7n 02 28	8 19 28	6 17 33	8 06 49	8 24 28	0 09 01	10 21 49	8 27 29	2 15 26	7
8	7 03 58	8 20 43	6 18 13	8 07 03	8 24 34	0 09 00	10 21 50	8 27 31	2 15 23	8
9	7 05 17	8 21 57	6 18 53	8 07 16	8 24 41	0 08 59	10 21 50	8 27 32	2 15 20	9
10	7 06 44	8 23 11	6 n19 33	8 07 30	8 24 47	0 08 57	10 21 50	8 27 34	2 15 16	10
11	7 08 11	8 24 25	6 20 12	8 07 43	8 24 54	0 08 55	10 21 51	8 27 36	2 15 13	11
12	7 09 39	8n 25 39	6 20 52	8 07 57	8 25 00	0 08 54	10 21 51	8 27 38	2 15 10	12
13	7 11 08	8 26 53	6 21 32	8 08 11	8 25 06	0 08 53	10 21 52	8 27 39	2 15 07	13
14	7 12 37	8 28 07	6 22 12	8 08 24	8 25 13	0 08 51	10 21 52	8 27 41	2 15 04	14
15	7 14 07	8 29 22	6 22 52	8s 08 38	8 25 20	0 08 50	10 21 53	8 27 43	2 15 01	15
16	7n 15 37	9 00 36	6 23 32	8 08 52	8 25 26	0 08 48	10 21 53	8 27 45	2 14 57	16
17	7 17 07	9 01 50	6 24 12	8 09 05	8 25 33	0 08 47	10 21 54	8 27 46	2 14 54	17
18	7 18 38	9 03 04	6 24 52	8 09 19	8 25 39	0 08 46	10 21 55	8 27 48	2 14 51	18
19	7 20 09	9 04 18	6 25 32	8 09 33	8r 25 46	0 08 45	10 21 56	8 27 50	2 14 48	19
20	7 21 40	9 05 32	6 26 12	8 09 47	8 25 53	0 08 44	10 21 56	8 27 52	2 14 45	20
21	7 23 12	9 06 45	6 26 53	8 10 00	8 26 00	0 08 43	10 21 57	8 27 54	2 14 41	21
22	7s 24 44	9 07 59	6 27 33	8 10 14	8 26 07	0 08 41	10 21 58	8 27 56	2 14 38	22
23	7 26 16	9n 09 13	6 28 13	8 10 28	8 26 13	0 08 40	10 21 59	8 27 58	2 14 35	23
24	7 27 48	9 10 27	6 28 53	8 10 42	8 26 20	0 08 40	10 22 00	8 28 00	2 14 32	24
25	7n 29 20	9 11 41	6 29 33	8 10 56	8 26 27	0 08 39	10 22 01	8 28 01	2 14 29	25
26	8 00 53	9 12 55	7 00 13	8 11 09	8n26 34	0 08 38	10 22 02	8 28 03	2 14 26	26
27	8 02 26	9 14 08	7 00 54	8 11 23	8 26 41	0 08 37	10 22 03	8 28 05	2 14 22	27
28	8 03 59	9 15 22	7 01 34	8 11 37	8 26 48	0 08 36	10 22 04	8 28 07	2 14 19	28
29	8 05 33	9 16 36	7 02 14	8 11 51	8 26 55	0 08 36	11 22 05	8 28 09	2 14 16	29
30	8 07 07	9 17 50	7n 02 55	8 12 05	8s 27 02	0 08 35	10 22 06	8 28 11	2 14 13	30
31	8 08 41	9 19 03	7 03 35	8 12 18	8 27 09	0 08 34	10 22 07	8 28 13	2 14 10	31
32	8 10 15	9 20 17	7 04 15	8 12 32	8 27 16	0 08 34	10 22 08	8 28 15	2 14 06	32

Lunar Pausa Sukladi (Sudi) begins from December 26, 10h 43m

Date	☿ Mercury		♀ Venus		♂ Mars		♃ Jupiter		♄ Saturn		♅ Uranus		♆ Neptune	
	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.	Lat.	Decli.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	2N 12	15S18	1S 29	24S45	0N38	13S29	0N08	23S18	0N05	22S08	0S 30	12N09	1S 02	6S30
3	2 01	16 07	1 31	24 40	0 37	13 55	0 08	23 18	0 05	22 07	0 30	12 08	1 02	6 30
5	1 48	16 59	1 34	24 32	0 36	14 21	0 08	23 18	0 05	22 05	0 30	12 06	1 02	6 30
7	1 34	17 52	1 37	24 21	0 35	14 47	0 08	23 18	0 05	22 04	0 30	12 05	1 02	6 30
9	1 20	18 43	1 40	24 08	0 34	15 12	0 08	23 18	0 05	22 02	0 30	12 04	1 02	6 29
11	1 05	19 33	1 43	23 51	0 33	15 37	0 07	23 18	0 05	22 01	0 30	12 03	1 02	6 29
13	0 50	20 21	1 45	23 31	0 32	16 01	0 07	23 18	0 05	21 59	0 30	12 02	1 02	6 29
15	0 36	21 06	1 47	23 09	0 31	16 25	0 07	23 18	0 04	21 57	0 30	12 01	1 02	6 28
17	0 21	21 47	1 48	22 44	0 30	16 48	0 07	23 17	0 04	21 55	0 30	12 01	1 02	6 28
19	0N 06	22 24	1 50	22 16	0 29	17 11	0 07	23 17	0 04	21 54	0 30	12 01	1 02	6 27
21	0S 08	22 58	1 51	21 45	0 28	17 33	0 06	23 16	0 04	21 52	0 30	11 59	1 02	6 26
23	0 22	23 27	1 51	21 13	0 27	17 55	0 06	23 15	0 04	21 50	0 30	11 59	1 02	6 26
25	0 35	23 52	1 52	20 37	0 26	18 17	0 06	23 14	0 04	21 48	0 30	11 58	1 02	6 25
27	0 48	24 11	1 52	20 00	0 25	18 37	0 06	23 13	0 04	21 46	0 30	11 57	1 02	6 24
29	1 00	24 26	1 51	19 20	0 23	18 58	0 06	23 12	0 03	21 44	0 30	11 57	1 02	6 23
31	1S 11	24S35	1S 51	18S38	0N22	19S17	0N05	23S11	0N03	21S42	0S 30	11N57	1S 02	6S22
32	1S 16	24S38	1S 50	18S16	0N22	19S27	0N05	23S11	0S 03	21S41	0S 30	11N57	1S 02	6S22

1st Dec. : Rahu Decli. 23°N 13'
1st Jan. (2020) : Rahu Decli.23°N 13'
1st Dec. Mean Ayanamsa : 24°08'07".
1st Jan. (2020) Mean Ayanamsa : 24°08'11".
Last Quarter : 19th, *10h 27m*
New Moon* : *26th, 10h 43m

Daily Motion of Sun (☉) and Moon (☽), 2019

Date	January		February		March		April		May		June	
	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
	' "	° ' "	' "	° ' "	' "	° ' "	' "	° ' "	' "	° ' "	' "	° ' "
1	61 10	12 52 35	60 55	11 20 20 4	60 14	11 55 45	59 15	11 49 08	58 16	12 10 29	57 31	13 27 17
2	61 10	12 38 39	60 54	11 54 59	60 13	11 49 14	59 12	11 54 58	58 15	12 23 51	57 31	13 25 43
3	61 11	12 26 16	60 54	11 50 27	60 12	11 46 38	59 11	12 03 25	58 12	12 38 30	57 30	13 42 15
4	61 11	12 15 17	60 52	11 48 14	60 10	11 47 19	59 08	12 13 32	58 11	12 53 19	57 28	13 55 55
5	61 10	12 05 50	60 51	11 48 04	60 08	11 50 33	59 07	12 24 30	58 10	13 07 20	57 28	14 06 02
6	61 11	11 57 56	60 50	11 49 56	60 06	11 55 45	59 04	12 35 46	58 07	13 20 01	57 26	14 12 34
7	61 10	11 55 55	60 48	11 53 51	60 04	12 02 29	59 03	12 46 58	58 06	13 31 03	57 26	14 15 39
8	61 11	11 48 09	60 48	12 00 07	60 03	12 10 28	59 00	12 58 13	58 04	13 40 42	57 24	14 15 50
9	61 10	11 47 06	60 45	12 09 04	60 00	12 19 39	58 58	13 09 42	58 02	13 49 12	57 23	14 13 35
10	61 09	11 49 19	60 44	12 21 06	59 59	12 30 17	58 55	13 21 54	58 01	13 57 00	57 22	14 09 11
11	61 09	11 55 17	60 43	12 36 30	59 56	12 42 39	58 54	13 34 07	57 58	14 04 10	57 21	14 02 52
12	61 08	12 05 29	60 41	12 55 28	59 54	12 57 08	58 51	13 49 30	57 56	14 10 32	57 19	13 54 37
13	61 08	12 20 04	60 39	13 17 45	59 52	13 14 04	58 49	14 04 33	57 55	14 15 22	57 20	13 44 25
14	61 07	12 39 08	60 38	13 42 39	59 49	13 33 23	58 46	14 19 13	57 53	14 17 38	57 18	13 32 19
15	61 07	13 02 06	60 36	14 08 48	59 48	13 54 38	58 44	14 31 50	57 51	14 16 11	57 17	13 18 32
16	61 06	13 28 12	60 34	14 34 03	59 45	14 16 29	58 42	14 40 17	57 49	14 10 13	57 16	13 03 31
17	61 05	13 55 44	60 32	14 55 38	59 43	14 37 03	58 40	14 42 30	57 48	13 59 24	57 16	12 48 00
18	61 04	14 22 26	60 31	15 10 37	59 40	14 53 42	58 38	14 37 13	57 46	13 44 06	57 15	12 32 46
19	61 03	14 45 38	60 29	15 26 23	59 39	15 03 39	58 36	14 14 12	57 45	13 25 31	57 15	12 18 44
20	61 03	15 02 36	60 28	15 11 44	59 36	15 04 36	58 34	14 04 41	57 44	13 05 11	57 15	12 06 49
21	61 02	15 11 03	60 26	14 56 57	59 34	14 55 39	58 32	13 40 49	57 42	12 44 56	57 14	11 57 49
22	61 02	15 09 54	60 25	14 34 09	59 32	14 37 36	58 30	13 15 13	57 42	12 26 19	57 14	11 52 24
23	61 01	14 59 27	60 23	14 06 22	59 31	14 12 45	58 29	12 50 23	57 40	12 10 47	57 14	11 51 10
24	61 00	14 41 25	60 22	13 36 53	59 29	13 44 13	58 27	12 28 24	57 39	11 59 16	57 14	11 54 26
25	61 00	14 18 13	60 21	13 08 33	59 26	13 15 04	58 26	12 10 39	57 38	11 52 29	57 13	12 02 22
26	60 59	13 52 14	60 19	12 43 24	59 26	12 48 24	58 23	11 57 59	57 37	11 50 44	57 14	12 14 54
27	60 59	13 27 11	60 17	12 22 38	59 23	12 25 36	58 23	11 50 45	57 36	11 54 02	57 14	12 31 32
28	60 58	13 03 31	60 17	12 06 46	59 21	12 07 51	58 20	11 48 53	57 35	12 02 11	57 13	12 51 34
29	60 58	12 42 52	—	—	59 20	11 55 34	58 20	11 52 02	57 35	12 14 34	57 14	13 13 48
30	60 56	12 25 44	—	—	59 18	11 48 4	58 17	11 59 30	57 33	12 30 20	57 13	13 36 41
31	60 57	12 12 14	—	—	59 16	11 46 44	—	—	57 33	12 28 22	—	—

Date	July		August		September		October		November		December	
	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽	☉	☽
	' "	° ' "	' "	° ' "	' "	° ' "	' "	° ' "	' "	° ' "	' "	° ' "
1	57 14	13 58 27	57 25	14 59 58	58 04	15 01 48	59 00	14 22 16	60 02	13 00 14	60 50	12 20 25
2	57 14	14 17 03	57 25	15 03 51	58 05	14 40 33	59 01	13 52 47	60 03	12 36 41	60 50	12 06 20
3	57 13	14 30 56	57 27	14 58 41	58 07	14 13 54	59 04	13 23 05	60 05	12 17 33	60 51	11 56 52
4	57 13	14 38 55	57 27	14 45 26	58 08	13 45 16	59 05	12 55 48	60 07	12 03 30	60 52	11 52 19
5	57 13	14 40 33	57 27	14 26 13	58 10	13 17 37	59 07	12 32 37	60 08	11 54 43	60 53	11 52 38
6	57 13	14 36 10	57 29	14 03 32	58 11	12 52 55	59 09	12 14 46	60 10	11 50 56	60 54	11 57 36
7	57 13	14 26 47	57 29	13 39 54	58 12	12 32 21	59 10	12 01 50	60 11	11 51 41	60 54	12 06 36
8	57 12	14 13 45	57 30	13 17 16	58 14	12 16 19	59 12	11 53 56	60 11	11 56 13	60 55	12 18 57
9	57 12	13 58 30	57 31	12 56 55	58 16	12 04 41	59 15	11 50 23	60 14	12 03 44	60 56	12 33 40
10	57 12	13 42 15	57 31	12 39 31	58 17	11 57 01	59 16	11 50 28	60 17	12 13 21	60 57	12 49 42
11	57 12	13 25 57	57 32	12 25 14	58 19	11 52 38	59 18	11 53 22	60 17	12 24 10	60 58	13 05 59
12	57 12	13 10 14	57 34	12 13 56	58 20	11 50 57	59 19	11 58 17	60 19	12 35 33	60 58	13 21 31
13	57 12	12 55 27	57 34	12 05 15	58 22	11 51 19	59 22	12 04 36	60 21	12 46 58	61 00	13 35 25
14	57 12	12 41 45	57 36	11 58 50	58 24	11 53 21	59 24	12 11 53	60 23	12 58 19	61 00	13 47 14
15	57 12	12 29 16	57 37	11 54 23	58 26	11 56 46	59 26	12 19 53	60 25	13 09 31	61 01	13 56 37
16	57 13	12 18 04	57 37	11 51 47	58 28	12 01 39	59 28	12 28 51	60 26	13 20 57	61 02	14 03 36
17	57 13	12 08 23	57 40	11 51 00	58 30	12 08 14	59 31	12 39 02	60 29	13 32 47	61 03	14 08 15
18	57 13	12 00 24	57 41	11 52 15	58 32	12 16 58	59 32	12 51 00	60 30	13 45 09	61 04	14 10 46
19	57 14	11 54 32	57 42	11 55 57	58 35	12 28 26	59 35	13 05 10	60 32	13 57 52	61 05	14 11 07
20	57 14	11 51 15	57 44	12 02 31	58 36	12 43 09	59 38	13 21 55	60 33	14 10 09	61 06	14 09 21
21	57 15	11 51 00	57 45	12 12 28	58 39	13 01 25	59 39	13 41 01	60 36	14 20 50	61 07	14 05 06
22	57 16	11 54 17	57 47	12 26 14	58 41	13 23 17	59 52	14 01 38	60 37	14 28 23	61 07	13 58 20
23	57 17	12 01 31	57 49	12 44 06	58 43	13 47 58	59 44	14 22 13	60 40	14 31 13	61 08	13 48 49
24	57 17	12 13 02	57 50	13 05 55	58 45	14 14 02	49 46	14 41 23	60 40	14 28 08	61 09	13 36 41
25	57 19	12 28 53	57 52	13 31 09	58 48	14 38 58	59 49	14 53 21	60 42	14 18 45	61 09	13 22 22
26	57 19	12 48 48	57 55	13 58 29	58 50	14 59 35	59 51	14 58 34	60 44	14 03 36	61 10	13 06 27
27	57 20	13 12 11	57 55	14 25 40	58 52	15 12 33	59 52	14 54 30	60 45	13 14 02	61 09	12 49 55
28	57 22	13 27 47	57 58	14 49 52	58 54	15 15 15	59 55	14 41 12	60 46	13 22 01	61 11	12 33 45
29	57 22	14 03 48	57 59	15 07 49	58 56	15 06 44	59 57	14 20 14	60 47	12 59 33	61 10	12 19 04
30	57 23	14 27 53	58 00	15 16 34	58 58	14 48 08	59 58	13 54 27	60 48	12 38 31	61 10	12 06 48
31	57 24	14 47 25	58 03	15 14 30	—	—	60 00	13 26 52	—	—	61 10	11 57 50

Daily Motion of Mercury (☿) & Venus (♀), 2019

Date	January		February		March		April		May		June	
	☿	♀	☿	♀	☿	♀	☿	♀	☿	♀	☿	♀
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	+1 28	+0 59	+1 45	+1 08	+0 39	+1 11	+0 21	+1 12	+1 41	+1 13	+2 00	+1 13
2	1 29	1 00	1 45	1 08	0 30	1 11	0 26	1 12	1 43	1 13	1 58	1 13
3	1 29	1 00	1 46	1 08	0 21	1 11	0 30	1 12	1 44	1 13	1 55	1 13
4	1 30	1 00	1 46	1 08	0 12	1 11	0 34	1 12	1 46	1 13	1 53	1 13
5	1 30	1 01	1 47	1 09	+0 02	1 11	0 38	1 12	1 48	1 13	1 50	1 13
6	1 30	1 01	1 48	1 09	−0 07	1 11	0 42	1 12	1 50	1 13	1 48	1 13
7	1 31	1 02	1 48	1 09	0 06	1 11	0 46	1 12	1 52	1 13	1 45	1 13
8	1 31	1 02	1 48	1 09	0 24	1 11	0 49	1 12	1 54	1 13	1 42	1 13
9	1 32	1 02	1 49	1 09	0 32	1 11	0 52	1 12	1 55	1 13	1 40	1 13
10	1 32	1 03	1 49	1 09	0 39	1 12	0 56	1 12	1 57	1 13	1 37	1 13
11	1 33	1 03	1 49	1 09	0 45	1 12	0 58	1 13	1 59	1 13	1 34	1 13
12	1 33	1 03	1 48	1 09	0 50	1 12	1 01	1 13	1 59	1 13	1 34	1 13
13	1 34	1 04	1 48	1 10	0 54	1 12	1 04	1 13	2 02	1 13	1 29	1 13
14	1 34	1 04	1 47	1 10	0 56	1 12	1 06	1 13	2 04	1 13	1 26	1 13
15	1 35	1 04	1 46	1 10	0 57	1 12	1 09	1 13	2 06	1 13	1 23	1 13
16	1 35	1 05	1 45	1 10	0 57	1 12	1 11	1 13	2 07	1 13	1 20	1 13
17	1 36	1 05	1 43	1 10	0 56	1 12	1 14	1 13	2 08	1 13	1 18	1 13
18	1 36	1 05	1 41	1 10	0 54	1 12	1 16	1 13	2 09	1 13	1 15	1 13
19	1 37	1 05	1 38	1 10	0 50	1 12	1 18	1 13	2 10	1 13	1 12	1 13
20	1 37	1 06	1 35	1 10	0 46	1 12	1 20	1 13	2 11	1 13	1 09	1 13
21	1 38	1 06	1 31	1 10	0 41	1 12	1 22	1 13	2 11	1 13	1 05	1 13
22	1 38	1 06	1 27	1 10	0 36	1 12	1 24	1 13	2 11	1 13	1 02	1 13
23	1 39	1 06	1 22	1 11	0 30	1 12	1 26	1 13	2 11	1 13	0 59	1 13
24	1 39	1 07	1 16	1 11	0 24	1 12	1 28	1 13	2 11	1 13	0 56	1 13
25	1 40	1 07	1 10	1 11	0 18	1 12	1 30	1 13	2 11	1 13	0 52	1 13
26	1 41	1 07	1 03	1 11	0 12	1 12	1 32	1 13	2 10	1 13	0 49	1 13
27	1 41	1 07	0 56	1 11	0 06	1 12	1 33	1 13	2 09	1 13	0 45	1 13
28	1 42	1 07	+0 48	+1 11	−0 00	1 12	1 35	1 13	2 07	1 13	0 41	1 13
29	1 43	1 08	—	—	+0 45	1 12	1 37	1 13	2 06	1 13	0 37	1 13
30	1 43	1 08	—	—	0 11	1 12	+1 39	+1 13	2 04	1 13	+0 33	+1 13
31	1 44	+1 08	—	—	+0 16	+1 12	—	—	+2 02	+1 13	—	—

Date	July		August		September		October		November		December	
	☿	♀	☿	♀	☿	♀	☿	♀	☿	♀	☿	♀
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	+1 29	+1 13	+0 02	+1 14	+1 58	+1 14	+1 27	+1 15	−0 07	+1 15	+1 12	+1 14
2	0 25	1 13	0 08	1 14	1 57	1 14	1 26	1 15	0 16	1 15	1 15	1 14
3	0 21	1 13	0 15	1 14	1 56	1 14	1 25	1 15	0 26	1 15	1 18	1 14
4	0 16	1 13	0 21	1 14	1 55	1 14	1 24	1 15	0 35	1 15	1 20	1 14
5	0 12	1 13	0 28	1 14	1 54	1 14	1 23	1 15	0 45	1 15	1 22	1 14
6	0 07	1 14	0 34	1 14	1 53	1 14	1 22	1 15	0 54	1 15	1 23	1 14
7	+0 02	1 14	0 41	1 14	1 52	1 14	1 21	1 15	1 03	1 15	1 24	1 14
8	−0 03	1 14	0 47	1 14	1 51	1 14	1 20	1 15	1 10	1 15	1 26	1 14
9	0 07	1 14	0 53	1 14	1 50	1 14	1 19	1 15	1 15	1 15	1 26	1 14
10	0 12	1 14	1 00	1 14	1 48	1 14	1 17	1 15	1 19	1 15	1 27	1 14
11	0 16	1 14	1 06	1 14	1 47	1 14	1 16	1 15	1 20	1 14	1 28	1 14
12	0 21	1 14	1 12	1 14	1 46	1 14	1 15	1 15	1 18	1 14	1 29	1 14
13	0 25	1 14	1 17	1 14	1 45	1 14	1 13	1 15	1 14	1 14	1 29	1 14
14	0 29	1 14	1 23	1 14	1 44	1 15	1 12	1 15	1 08	1 14	1 30	1 14
15	0 32	1 14	1 28	1 14	1 43	1 15	1 10	1 15	0 59	1 14	1 30	1 14
16	0 35	1 14	1 32	1 14	1 42	1 15	1 08	1 15	0 49	1 14	1 30	1 14
17	0 37	1 14	1 37	1 14	1 41	1 15	1 06	1 15	0 38	1 14	1 31	1 14
18	0 39	1 14	1 41	1 14	1 40	1 15	1 04	1 15	0 27	1 14	1 31	1 14
19	0 41	1 14	1 44	1 14	1 39	1 15	1 01	1 15	0 15	1 14	1 31	1 14
20	0 41	1 14	1 48	1 14	1 38	1 15	0 58	1 15	−0 03	1 14	1 32	1 14
21	0 41	1 14	1 50	1 14	1 37	1 15	0 55	1 15	+0 08	1 14	1 32	1 14
22	0 40	1 14	1 53	1 14	1 36	1 15	0 52	1 15	0 18	1 14	1 32	1 14
23	0 38	1 14	1 55	1 14	1 35	1 15	0 48	1 15	0 27	1 14	1 32	1 14
24	0 36	1 14	1 56	1 14	1 34	1 15	0 44	1 15	0 35	1 14	1 33	1 14
25	0 33	1 14	1 58	1 14	1 33	1 15	0 40	1 15	0 43	1 14	1 33	1 14
26	0 29	1 14	1 58	1 14	1 32	1 15	0 35	1 15	0 50	1 14	1 33	1 14
27	0 25	1 14	1 59	1 14	1 31	1 15	0 29	1 15	0 56	1 14	1 33	1 14
28	0 21	1 14	1 59	1 14	1 30	1 15	0 23	1 15	1 01	1 14	1 34	1 14
29	0 15	1 14	1 59	1 14	1 29	1 15	0 16	1 15	1 05	1 14	1 34	1 14
30	0 10	1 14	1 59	1 14	+1 28	+1 15	0 09	1 15	+1 09	+1 14	1 34	1 14
31	−0 04	+1 14	+1 58	+1 14	—	—	+0 01	+1 15	—	—	+1 34	+1 14

Daily Motion of Mars (♂) Jupiter (♃) and Saturn (♄), 2019

Date	January			February			March			April			May			June		
	♂	♃	♄	♂	♃	♄	♂	♃	♄	♂	♃	♄	♂	♃	♄	♂	♃	♄
	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'
1	+40	+13	+07	+41	+10	+07	+40	+07	+05	+40	+02	+03	+39	-04	-00	+39	-07	-03
2	40	13	07	41	10	07	40	07	05	40	02	03	39	04	00	38	07	03
3	40	12	07	41	10	07	40	07	05	40	01	03	39	04	00	38	08	03
4	40	12	07	41	10	06	40	06	05	40	01	02	39	04	00	38	08	03
5	40	12	07	41	10	06	40	06	05	40	01	02	39	04	01	38	08	03
6	40	12	07	41	10	06	40	06	05	40	01	02	39	05	01	38	08	03
7	40	12	07	41	10	06	40	06	05	40	01	02	39	05	01	38	08	03
8	41	12	07	41	10	06	40	06	05	40	00	02	39	05	01	38	08	03
9	41	12	07	41	09	06	40	06	05	40	00	02	39	05	01	38	08	03
10	41	12	07	41	09	06	40	06	05	40	+00	02	39	05	01	38	08	04
11	41	12	07	41	09	06	40	05	04	39	-00	02	39	05	01	38	08	04
12	41	12	07	41	09	06	40	05	04	39	00	02	39	05	01	38	08	04
13	41	12	07	41	09	06	40	05	04	39	01	02	39	06	01	38	08	04
14	41	12	07	41	09	06	40	05	04	39	01	02	39	06	01	38	08	04
15	41	12	07	41	09	06	40	05	04	39	01	01	39	06	01	38	08	04
16	41	12	07	41	09	06	40	05	04	39	01	01	39	06	02	38	08	04
17	41	12	07	41	09	06	40	04	04	39	01	01	39	06	02	38	08	04
18	41	12	07	41	08	06	40	04	04	39	01	01	39	06	02	38	08	04
19	41	11	07	40	08	06	40	04	04	39	02	01	39	06	02	38	07	04
20	41	11	07	40	08	06	40	04	04	39	02	01	39	06	02	38	07	04
21	41	11	07	40	08	06	40	04	04	39	02	01	39	07	02	38	07	04
22	41	11	07	40	08	06	40	04	04	39	02	01	39	07	02	38	07	04
23	41	11	07	40	08	06	40	03	04	39	02	01	39	07	02	38	07	04
24	41	11	07	40	08	05	40	03	03	39	03	01	39	07	02	38	07	04
25	41	11	07	40	08	05	40	03	03	39	03	00	39	07	02	38	07	04
26	41	11	07	40	07	05	40	03	03	39	03	00	39	07	02	38	07	04
27	41	11	07	40	07	05	40	03	03	39	03	00	39	07	03	38	07	04
28	41	11	07	+40	+07	+05	40	02	03	39	03	00	39	07	03	38	07	04
29	41	11	07	—	—	—	40	02	03	39	03	+00	39	07	03	38	07	04
30	41	11	07	—	—	—	40	02	03	+39	-04	-00	39	07	03	+38	-07	04
31	+41	+10	+07	—	—	—	+40	-02	+03	—	—	—	+39	-067	-03	—	—	—

Date	July			August			September			October			November			December		
	♂	♃	♄	♂	♃	♄	♂	♃	♄	♂	♃	♄	♂	♃	♄	♂	♃	♄
	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'
1	+38	-027	-04	+38	-02	-04	+38	+04	-02	+39	+08	+01	+39	+12	+04	+40	+13	+06
2	38	06	04	38	02	04	38	04	02	39	08	01	39	12	04	40	13	06
3	38	06	04	38	02	04	38	04	01	39	09	01	39	12	04	40	13	06
4	38	06	04	38	01	04	38	04	01	39	09	02	39	12	04	40	13	06
5	38	06	04	38	01	04	38	04	01	39	09	02	39	12	04	40	13	06
6	38	06	04	38	01	04	38	05	01	39	09	02	39	12	04	40	13	06
7	38	06	04	38	01	04	38	05	01	39	09	02	39	12	05	40	14	06
8	38	06	04	38	01	03	38	05	01	39	09	02	39	12	05	40	14	06
9	38	06	04	38	00	03	38	05	01	39	09	02	39	12	05	40	14	06
10	38	05	04	38	00	03	38	05	01	39	09	02	39	12	05	40	14	06
11	38	05	04	38	-00	03	38	05	01	39	10	02	39	12	05	40	14	06
12	38	05	04	38	+00	03	38	06	01	39	10	02	39	12	05	40	14	07
13	38	05	04	38	00	03	38	06	00	39	10	02	39	12	05	40	14	07
14	38	05	04	38	01	03	38	06	00	39	10	03	39	12	05	40	14	07
15	38	05	04	38	01	03	38	06	00	39	10	03	39	13	05	40	14	07
16	38	05	04	38	01	03	38	06	00	39	10	03	39	13	05	40	14	07
17	38	04	04	38	01	03	38	06	00	39	10	03	39	13	05	40	14	07
18	38	04	04	38	01	03	38	07	+00	39	10	03	39	13	05	40	14	07
19	38	04	04	38	01	03	38	07	-00	39	10	03	39	13	05	40	14	07
20	38	04	04	38	02	03	38	07	00	39	10	03	39	13	05	40	14	07
21	38	04	04	38	02	03	38	07	00	39	11	03	40	13	05	40	14	07
22	38	04	04	38	02	02	38	07	00	39	11	03	40	13	06	40	14	07
23	38	03	04	38	02	02	38	07	01	39	11	03	40	13	06	40	14	07
24	38	03	04	38	02	02	38	07	01	39	11	03	40	13	06	40	14	07
25	38	03	04	38	03	02	39	08	01	39	11	04	40	13	06	40	14	07
26	38	03	04	38	03	02	39	08	01	39	11	04	40	13	06	40	14	07
27	38	03	04	38	03	02	39	08	01	39	11	04	40	13	06	40	14	07
28	38	03	04	38	03	02	39	08	01	39	11	04	40	13	06	40	14	07
29	38	02	04	38	03	02	39	08	01	39	11	04	40	13	06	40	14	07
30	38	02	04	38	03	02	+39	+08	+01	39	11	04	+40	+13	+06	40	14	07
31	+38	-02	-04	+38	+04	-02	—	—	—	+39	+11	+04	—	—	—	+40	+14	+07

Entrance of Sun (☉) into Nakshatras, 2019

The timings of Sun's entry into different *nakshatra*-divisions are given below in I.S.T.

Nakshatra		*d*	*h*	*m*
21 Uttarasada	Jan.	11	13	21
0 *Enters Abhijit*		20	10	02
22 Sravana		24	15	42
0 *Leaves Abhijit*		25	12	40
23 Dhanistha	Feb.	6	18	47
24 Satabhisaj		19	23	18
25 Purvabhadrapada	Mar.	5	05	37
26 Uttarabhadrapada		18	14	00
27 Revati		31	24	54
1 Asvini	Apr.	14	14	09
2 Bharani		28	06	03
3 Krittika	May	11	24	08
4 Rohini		25	20	26
5 Mrigasiras	Jun.	8	18	13
6 Ardra		22	17	19
7 Punarvasu	Jul.	6	16	50
8 Pusya		20	16	26
9 Aslesa	Aug.	3	15	18
10 Magha		17	13	02
11 Purvaphalguni		31	09	00
12 Uttarphalguni	Sep.	13	26	54
13 Hasta		27	18	27
14 Citra	Oct.	11	07	26
15 Swati		24	18	00
16 Vishakha	Nov.	6	26	04
17 Anuradha		20	08	12
18 Jyestha	Dec.	3	12	24
19 Mula		16	15	28
20 Purvasada		29	17	36
21 Uttarasada (2020)	Jan.	11	19	36

Entrance of Moon (☽) into Nirayana Signs *(Rasis)*, 2019 in I.S.T.

Enters :-	*d*	*h*	*m*	*d*	*h*	*m*	*d*	*h*	*m*	*d*	*h*	*m*	*d*	*h*	*m*
0 Mesha				Mar. 9	25	18	May 30	23	03	Aug. 20	22	29	Nov. 10	17	18
1 Vrisha				12	10	23	Jun. 2	06	45	23	08	58	12	27	11
2 Mithuna				14	16	58	4	11	39	25	16	13	15	11	02
3 Karkata				16	20	39	6	14	51	27	19	42	17	17	05
4 Simha				18	21	46	8	17	22	29	20	11	19	21	22
5 Kanya				20	21	35	10	20	00	31	19	22	21	24	03
6 Tula				22	22	02	12	23	21	Sep. 2	19	24	23	25	46
7 Vriscika	Jan. 1	27	23	24	25	08	14	28	01	4	22	15	25	27	44
8 Dhanus	4	12	53	27	08	19	17	10	43	6	28	58	28	07	34
9 Makara	6	24	25	29	19	23	19	19	59	9	15	12	30	14	33
10 Kumbha	9	13	15	Apr. 1	08	21	22	07	39	11	27	28	Dec. 2	24	57
11 Mina	11	26	03	3	20	48	24	20	19	14	16	12	5	13	23
0 Mesha	14	12	52	6	07	22	27	07	43	16	28	22	7	25	28
1 Vrisha	16	20	08	8	15	54	29	16	02	19	15	11	10	11	18
2 Mithuna	18	23	32	10	22	32	Jul. 1	20	53	21	23	39	12	18	23
3 Karkata	20	24	05	12	27	15	3	23	09	23	28	49	14	23	17
4 Simha	22	23	32	15	05	59	5	24	18	26	06	40	16	26	47
5 Kanya	24	23	49	17	07	17	7	25	47	28	06	19	19	05	39
6 Tula	26	26	39	19	08	25	9	28	45	30	05	45	21	08	28
7 Vriscika	29	08	59	21	11	12	12	09	54	Oct. 2	07	10	23	11	53
8 Dhanus	31	18	40	23	17	16	14	17	26	4	12	19	25	16	41
9 Makara	Feb. 3	06	39	25	27	14	16	27	15	6	21	36	27	23	45
10 Kumbha	5	19	35	28	15	45	19	14	58	9	09	41	30	09	35
11 Mina	8	08	18	30	11	28	21	27	40	11	22	27	Jan. 1	21	38
0 Mesha	10	19	37	May 3	14	40	24	15	42	14	10	20	(2020)		
1 Vrisha	12	28	19	5	22	30	26	25	09	16	20	46			
2 Mithuna	15	09	32	7	28	15	29	06	55	18	29	23			
3 Karkata	17	11	23	10	08	36	31	09	15	21	11	40			
4 Simha	19	11	03	12	11	55	Aug. 2	09	29	23	15	13			
5 Kanya	21	10	22	14	14	29	4	09	28	25	16	23			
6 Tula	23	11	27	16	16	57	6	11	01	27	16	32			
7 Vriscika	25	16	02	18	20	31	8	15	26	29	17	35			
8 Dhanus	27	24	45	20	26	29	10	23	06	31	21	31			
9 Makara	Mar. 2	12	40	23	11	44	13	09	26	Nov. 2	29	26			
10 Kumbha	4	25	44	25	23	43	15	21	28	5	16	47			
11 Mina	7	14	15	28	12	19	18	10	10	7	29	29			

Transit of Planets into *Nirayana Rasis* (Signs), 2019 in I.S.T.

MERCURY ☿

Enters :-			d	h	m	Enters :-			d	h	m
Dhanus	on	Jan.	1	09	50	Mithuna(R)	on	Jul.	30	11	51
Makara	"	Jan.	20	21	07	Karkata	"	Aug.	3	05	59
Kumbha	"	Feb.	7	10	10	Simha	"	Aug.	26	14	07
Mina	"	Feb.	25	08	53	Kanya	"	Sep.	10	28	59
Kumbha (R)	"	Mar.	15	09	00	Tula	"	Sep.	29	12	55
Mina	"	Apr.	11	28	24	Vriscika	"	Oct.	23	23	12
Mesha	"	May	3	17	03	Tula (R)	"	Nov.	7	15	55
Vrisha	"	May	18	23	35	Vriscika	"	Dec.	5	10	34
Mithuna	"	Jun.	1	24	17	Dhanus	"	Dec.	25	15	46
Karkata	"	Jun.	20	26	27	Makara	" (2020)	Jan.	13	11	35

VENUS ♀

Enters :-			d	h	m	Enters :-			d	h	m
Vriscika	on	Jan.	1	20	43	Karkata	on	Jul.	23	12	49
Dhanus	"	Jan.	29	23	29	Simha	"	Aug.	16	20	39
Makara	"	Feb.	24	22	45	Kanya	"	Sep.	9	25	41
Kumbha	"	Mar.	21	27	45	Tula	"	Oct.	3	29	14
Mina	"	Apr.	15	25	04	Vriscika	"	Oct.	28	08	32
Mesha	"	May	10	19	06	Dhanus	"	Nov.	21	12	23
Vrisha	"	Jun.	4	11	20	Makara	"	Dec.	15	17	59
Mithuna	"	Jun.	28	25	34	Kumbha	" (2020)	Jan.	8	28	23

MARS ♂

Enters :-			d	h	m	Enters :-			d	h	m
Mesha	on	Feb.	5	23	48	Kanya	on	Sep.	25	06	33
Vrisha	"	Mar.	22	15	05	Tula	"	Nov.	10	14	24
Mithuna	"	May	7	06	53	Vriscika	"	Dec.	25	21	29
Karkata	"	Jun.	22	23	23	Dhanus	" (2020)	Feb.	7	27	52
Simha	"	Aug.	08	28	47						

JUPITER ♃

Enters			d	h	m	Enters			d	h	m
Dhanus	on	Mar.	29	20	05	Dhanus	on	Nov.	4	29	17
Vriscika (R)	"	Apr.	22	25	14	Makara	" (2020)	Mar.	29	27	54

SATURN ♄

Remains in **Dhanus Rasi** during the year.

URANUS ♅

Remains in **Mesha Rasi** during the year.

NEPTUNE ♆

Remains in **Kumbha Rasi** during the year.

PLUTO ♇

Remains in **Dhanus Rasi** during the year.

RAHU ☊

RAHU (True) enters Mithuna *(R)* Rasi on Mar. 23, $12^h\,41^m$

RAHU (Mean) enters in Mithuna *(R)* Rasi on Mar. 7, 07^h45^m

KETU ☋

KETU (True) enters Dhanus *(R)* Rasi on Mar. 23, $12^h\,41^m$

KETU (Mean) enters Dhanus *(R)* Rasi on Mar. 7, 07^h45^m

NAVAMSAS — Navamsa Signs and their Lords

Sign	1st 0° 0' to 3° 20'	2nd 3° 20' to 6° 40'	3rd 6° 40' to 10° 0'	4th 10° 0' to 13° 20'	5th 13° 20' to 16°40'	6th 16° 40' to 20° 0'	7th 20° 0' to 23° 20'	8th 23° 20' to 26° 40'	9th 26° 40' to 30° 0'
0 Mesha	0 ♂	1 ♀	2 ☿	3 ☽	4 ☉	5 ☿	6 ♀	7 ♂	8 ♃
1 Vrisha	9 ♄	10 ♄	11 ♃	0 ☉	1 ♀	2 ☿	3 ☽	4 ☉	5 ☿
2 Mithuna	6 ♀	7 ♂	8 ♃	9 ♄	10 ♄	11 ♃	0 ♂	1 ♀	2 ☿
3 Karkata	3 ☽	4 ☉	5 ☿	6 ♀	7 ♂	8 ♃	9 ♄	10 ♄	11 ♃
4 Simha	0 ♂	1 ♀	2 ☿	3 ☽	4 ☉	5 ☿	6 ♀	7 ♂	8 ♃
5 Kanya	9 ♄	10 ♄	11 ♃	0 ☉	1 ♀	2 ☿	3 ☽	4 ☉	5 ☿
6 Tula	6 ♀	7 ♂	8 ♃	9 ♄	10 ♄	11 ♃	0 ♂	1 ♀	2 ☿
7 Vriscika	3 ☽	4 ☉	5 ☿	6 ♀	7 ♂	8 ♃	9 ♄	10 ♄	11 ♃
8 Dhanus	0 ♂	1 ♀	2 ☿	3 ☽	4 ☉	5 ☿	6 ♀	7 ♂	8 ♃
9 Makara	9 ♄	10 ♄	11 ♃	0 ☉	1 ♀	2 ☿	3 ☽	4 ☉	5 ☿
10 Kumbha	6 ♀	7 ♂	8 ♃	9 ♄	10 ♄	11 ♃	0 ♂	1 ♀	2 ☿
11 Mina	3 ☽	4 ☉	5 ☿	6 ♀	7 ♂	8 ♃	9 ♄	10 ♄	11 ♃

The figure 0 means that the Navamsa falls in the sign (*Rasi*) of Mesha, etc.
The Lords of the Navamsa signs are indicated by the planetary symbols.

Transit of Planets into Nakshatras, 2019 in I.S.T.

Naks.	Date and Time				Naks.	Date and Time				Naks.	Date and Time			
	MERCURY ☿					VENUS ♀ —Contd.					MARS ♂—Contd.			
		d	h	m			d	h	m			d	h	m
19	Jan.	1	09	50	19	Jan.	29	23	29	7	Jun.	7	07	40
20	Jan.	10	07	09	20	Feb.	10	15	52	8	Jun.	27	28	59
21	Jan.	18	19	26	21	Feb.	21	26	42	9	Jul.	18	28	30
22	Jan.	26	22	37	22	Mar.	5	09	41	10	Aug.	8	28	47
23	Feb.	3	16	22	23	Mar.	16	14	10	11	Aug.	29	28	21
24	Feb.	10	26	46	24	Mar.	27	16	57	12	Sep.	19	25	43
25	Feb.	18	15	17	25	Apr.	7	18	27	13	Oct.	10	19	38
26	Feb.	28	15	59	26	Apr.	18	19	13	14	Oct.	31	09	19
25 R	Mar.	11	13	03	27	Apr.	29	19	23	15	Nov.	20	18	14
26	Apr.	15	07	31	1	May	10	19	06	16	Dec.	10	22	00
27	Apr.	25	10	35	2	May	21	18	34	17	Dec.	30	20	40
1	May	3	17	03	3	Jun.	1	17	38	18	Jan.(2020)	19	14	32
2	May	10	22	09	4	Jun.	12	16	20		JUPITER ♃			
3	May	17	10	18	5	Jun.	23	14	38	19	Mar.	29	20	05
4	May	23	13	29	6	Jul.	4	12	19	18 R	Apr.	22	25	14
5	May	29	17	52	7	Jul.	15	09	25	19	Nov.	4	29	17
6	Jun.	5	11	49	8	Jul.	26	05	52	20	Jan.(2020)	4	16	21
7	Jun.	13	11	23	9	Aug.	5	25	33		SATURN ♄			
8	Jun.	24	07	28	10	Aug.	16	20	39	21	Dec.	26	26	20
7 R	Jul.	23	06	29	11	Aug.	27	15	11		URANUS ♅			
8	Aug.	9	12	15	12	Sep.	7	09	13					
9	Aug.	19	11	42	13	Sep.	17	27	00	1	Remains in 1N.			
10	Aug.	26	14	07	14	Sep.	28	20	32		NEPTUNE ♆			
11	Sep.	2	08	09	15	Oct.	9	13	57	25	Jan.	2	24	12
12	Sep.	9	08	55	16	Oct.	20	07	26		PLUTO ♇			
13	Sep.	16	22	32	17	Oct.	30	24	54					
14	Sep.	24	27	45	18	Nov.	10	18	31					
15	Oct.	3	27	11	19	Nov.	21	12	23	20 R	Sep.	7	09	25
16	Oct.	14	05	50	20	Dec.	2	06	30	21	Oct.	29	07	10
17	Oct.	30	06	05	21	Dec.	12	25	11		RAHU (True) ☊			
16 R	Nov.	2	10	32	22	Dec.	23	20	42	6 R	Sep.	27	15	25
15 R	Nov.	15	20	50	23	Jan.(2020)	3	17	23		KETU (True) ☋			
16	Nov.	26	16	22		MARS ♂				20 R	Apr.	23	19	39
17	Dec.	7	20	29	27	Jan.	17	07	18		RAHU (Mean) ☊			
18	Dec.	16	22	21	1	Feb.	5	23	48					
19	Dec.	25	15	46	2	Feb.	25	17	35	7 R	Jan.	3	10	05
20	Jan.(2020)	2	28	19	3	Mar.	17	14	59	6 R	Sep.	11	24	44
	VENUS ♀				4	Apr.	6	17	20		KETU (Mean) ☋			
17	Jan.	4	28	48	5	Apr.	26	25	03	20 R	May	8	29	24
18	Jan.	17	21	57	6	May	17	13	59					

Mercury *enters 0 Abhijit Nakshatra* on Jan.24, 10*h* 41*m* and *leaves* on Jan.27, 11*h* 16*m*.
Venus *enters 0 Abhijit Nakshatra* on Mar.2, 14*h* 12*m* and *leaves* on Mar.5, 27*h* 38*m*,
again Venus enters 0 Abhijit Nakshatra on Dec.20, 9*h* 24*m* and *leaves on* Dec.24, 14*h* 02*m*.

Beginning of Nakshatra Division & Vimsottari Dasa

Nakshatra	Long.				Vimsottari Dasa		Nakshatra	Long.				Vimsottari Dasa	
	s	°	'		years			s	°	'		years	
1 Asvini	0	0	00		Ketu	7	15 Svati	6	6	40		Rahu	18
2 Bharani	0	13	20		Venus	20	16 Visakha	6	20	00		Jupiter	16
3 Krittika	0	26	40		Sun	6	17 Anuradha	7	3	20		Saturn	19
4 Rohini	1	10	00		Moon	10	18 Jyestha	7	16	40		Mercury	17
5 Mrigairas	1	23	20		Mars	7	19 Mula	8	0	00		Ketu	7
6 Ardra	2	6	40		Rahu	18	20 Purvasadha	8	13	20		Venus	20
7 Punarvasu	2	20	00		Jupiter	16	21 Uttarasadha	8	26	40		Sun	6
8 Pusya	3	3	20		Saturn	19	22 Sravana	9	10	00		Moon	10
9 Aslesa	3	16	40		Mercury	17	23 Dhanistha	9	23	20		Mars	7
10 Magha	4	0	00		Ketu	7	24 Satabhisaj	10	6	40		Rahu	18
11 P.Phalguni	4	13	20		Venus	20	25 P.Bhadrapada	10	20	00		Jupiter	16
12 U.Phalguni	4	26	40		Sun	6	26 U.Bhadrapada	11	3	20		Saturn	19
13 Hasta	5	10	00		Moon	10	27 Revati	11	16	40		Mercury	17
14 Citra	5	23	20		Mars	7	1 Asvini	0	0	00		Ketu	7

The ancient *Abhijit* nakshatra extends from 9ˢ 6° 40' 0" to 9ˢ 10° 53' 20"

PHENOMENA, 2019

Conjunctions and Oppositions of Planets with the Sun in Longitude, 2019 (I.S.T).

Planet	Superior Conjunction						Inferior Conjunction* (or Opposition)						
	Date			Long. (D)			Date			Long. (R)			
		d	h	m	s	°	'		d	h	m	s	°	'
Mercury	Jan.	30	08	20	9	21	37	Mar.	15	07	17	11	01	33
	May	21	18	36	1	07	12	Jul.	21	18	05	3	05	34
	Sep.	4	07	11	4	19	29	Nov.	11	20	52	6	27	46
Venus	Aug.	14	11	37	6	29	32	—				—		

SUPERIOR PLANETS

	Conjunction				Long. (D)			Opposition				Long. (R)		
		d	h	m	s	°	'		d	h	m	s	°	'
Mars	Sep.	2	16	12	4	16	07	—				—		
Jupiter	Dec.	27	23	55	3	12	27	Jun.	10	20	58	7	25	43
Saturn	Jan.	2	11	20	8	18	18	Jul.	9	22	37	8	23	15
Uranus	Apr.	22	28	36	0	08	29	Oct.	28	13	35	0	10	50
Neptune	Mar.	7	06	30	10	22	06	Sep.	10	12	54	10	23	15
Pluto	Jan.	11	17	05	10	27	26	Jul.	14	20	17	8	27	50

* Inferior conjunction occurs in case of inferior planets *viz.* Mercury and Venus, while they are retrograde and coming between the Sun and the Earth. The planets Mars to Pluto are regarded as superior planets.

Heliacal Settings or Combustion of Planets, 2019 in I.S.T.

(Calculated for the Central Station of India, 23°11' North latitude)

Planet	Inferior Planets (Direct)							Inferior Planets (Retrograde))						
	Sets in the East (Western horizon)			Rises in the West (Eastern horizon)			Period	Sets in the West (Eastern horizon)			Rises in the East (Western horizon)			Period
	d	h	m		d	h	m		d	h	m		d	h	m	
Mercury	Jan. 10	11	27	Feb.	12	12	36	33	Mar. 9	16	54	Mar. 21	18	25	12
	May 6	26	47	May	29	28	28	23	Jul. 11	12	37	Jul. 29	10	29	18
	Aug. 25	09	21	Sep.	22	18	15	28	Nov. 4	21	08	Nov. 16	10	24	12
	Dec. 22	12	30	Jan.(2020)	26	05	32	35	—			—			—
Venus	Jul. 23	14	53	Sep.	9	28	39	48	—			—			—

SUPERIOR PLANETS (Direct)

Mars	—	—	—	Jul.	11	12	01	Oct.	13	28	19	59
Jupiter	—	—	—	Dec.	16	05	57	Jan.('20)	9	06	33	24
Saturn	—	—	—	Dec.	19	09	43	Jan.('20)	7	17	01	29
				Dec.	30	24	16	Jan.('20)	30	05	51	31

N.B. Here Western horizon means East of the Sun and Eastern horizon means West of the Sun. The Superior planets always set in the western horizon and rises in the eastern horizon.

Retrogression of Planets, 2019 in I.S.T.

Planet	Retrograde							Direct						Retrogression		
	Date				Long. of planets			Date				Long.of planets			Period	Arc
		d	h	m	s	°	'		d	h	m	s	°	'	d	° '
Mercury	Mar.	5	23	53	11	05	29	Mar.	28	19	33	10	21	59	23	13 30
	Jul.	7	28	44	3	10	18	Aug.	1	09	20	2	29	49	25	10 29
	Oct.	31	21	01	7	03	29	Nov.	20	24	54	6	17	31	20	15 58
Venus	—				—			—				—			—	—
Mars	—				—			—				—			—	—
Jupiter	Apr.	10	22	31	8	00	14	Aug.	11	19	07	7	20	23	123	9 51
Saturn	Apr.	30	06	26	8	26	24	Sep.	18	14	16	8	19	47	141	6 37
Uranus	Aug.	12	07	54	0	12	29	Jan.	6	25	56	0	04	29	218	8 00
Neptune	Jun.	21	20	09	10	24	36	Nov.	27	18	03	10	21	48	159	2 48
Pluto	Apr.	24	24	17	8	29	02	Oct.	3	12	09	8	26	30	162	2 32

Interpolation

The longitudes of Moon and other fast moving planets calculated by the usual methods of simple proportion from their daily positions, for any intermediate hour of the day though fairly correct for our ordinary purposes are not strictly accurate. To obtain more precise result, further correction is to be applied to the longitude of planet already obtained by the rule of proportion.

Suppose *a. b. c. d* represent the longitudes of a planet for four successive days (for 5-30 a.m.I.S.T) and *l, m, n*, be the motions during the three intervals as indicated below. The longitude for any hour between the positions *b* and *c* is required to be calculated.

a	
b	*l*
c	*m*
d	*n*

Firstly find the longitude by utilising the position *b* and the daily motion *m* by the usual method. Then apply interpolation. For this calculate $(n-l)$ and take the result from the following table according to $(n-l)$ and given time from 5-30 a. m. If $(n-l)$ is positive, the correction would be negative and *vice versa. i.e.* the correction is of opposite sign to $(n-l)$

Correction due to second differences

Time interval	$(n-l)$									Time interval
	4'	8'	16'	24'	32'	40'	48'	56'	64'	
h *m*	0"	0"	0"	0' 0"	0' 0"	0' 0"	0' 0"	0' 0"	0' 0"	*h* *m*
0 18	1	2	3	0 5	0 6	0 8	0 9	0 11	0 12	24 00
0 37	2	3	6	0 9	0 12	0 15	0 18	0 21	0 24	23 42
0 56	2	5	9	0 14	0 18	0 23	0 27	0 32	0 36	23 23
1 16	3	6	12	0 18	0 24	0 30	0 36	0 42	0 48	23 04
1 36	4	8	15	0 23	0 30	0 38	0 45	0 53	1 0	22 44
1 58	4	9	18	0 27	0 36	0 45	0 54	1 3	1 12	22 24
2 20	5	11	21	0 32	0 42	0 53	1 3	1 14	1 24	22 02
2 42	6	12	24	0 36	0 48	1 0	1 12	1 24	1 36	21 40
3 06	7	14	27	0 41	0 54	1 8	1 21	1 35	1 48	21 18
3 31	7	15	30	0 45	1 0	1 15	1 30	1 45	2 0	20 54
3 57	8	17	33	0 50	1 6	1 23	1 39	1 56	2 12	20 29
4 25	9	18	36	0 54	1 12	1 30	1 48	2 6	2 24	20 03
4 54	10	20	39	0 59	1 18	1 38	1 57	2 17	2 36	19 35
5 26	10	21	42	1 3	1 24	1 45	2 6	2 27	2 48	19 06
6 00	11	23	45	1 8	1 30	1 53	2 15	2 38	3 0	18 34
6 38	12	24	48	1 12	1 36	2 0	2 24	2 48	3 12	18 00
7 21	13	25	51	1 17	1 42	2 8	2 33	2 59	3 24	17 22
8 12	13	27	54	1 21	1 48	2 15	2 42	3 9	3 36	16 39
9 19	14	29	57	1 26	1 54	2 23	2 51	3 20	3 48	15 48
12 00	15	30	60	1 30	2 0	2 30	3 0	3 30	4 0	14 41
										12 00

Method of Calculation

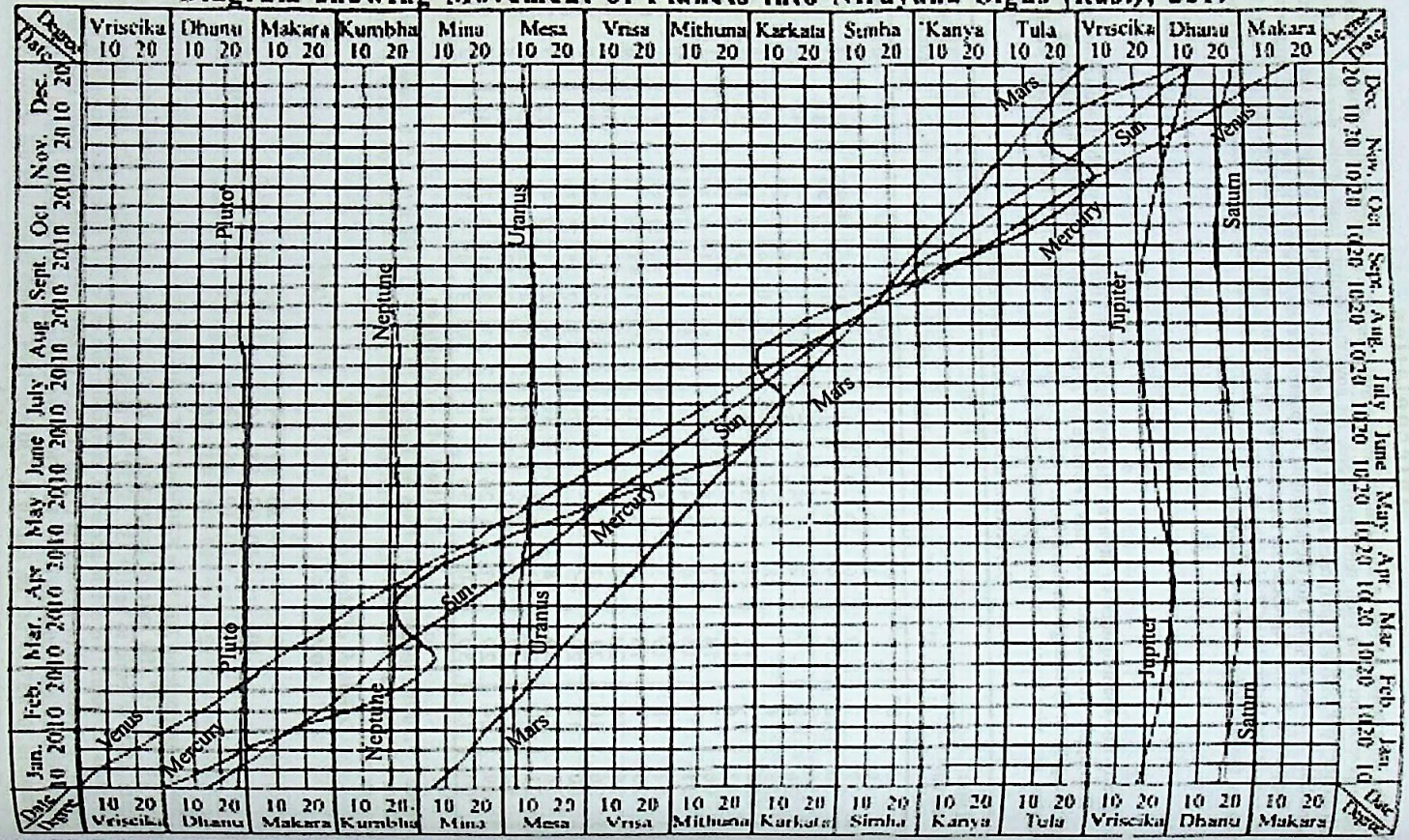
Example : Find the longitude of Moon on January. 10, 2019 at 5-30 p.m. I.S.T. from the given positions of Moon at 5-30 a.m. I.S.T. For this purpose positions of Moon from Jan. 9 to Jan. 12 are given below.

Longitude of Moon at 5-30 a. m. I.S.T

2019						*Diff.*			
			S	°	'	"	°	'	"	
Apr.	9	=	9	26	11	44				
	10	=	10	07	58	50	11	47	06	(= *l*)
	11	=	10	19	48	09	11	49	19	(= *m*) $(n-l) = +08'\ 11"$
	12	=	11	01	43	26	11	55	17	(= *n*)

Moon's longitude on Jan. 10 at 5-30 a.m. I.S.T. = $10^S\ 07°\ 58'\ 50"$. Daily motion of Moon on that date = 11° 49' 19". By rule of proportion or by using Log. tables, the position of Moon at 5-30 p.m. I.S.T. is found to be $10^S\ 13°\ 53'\ 30"$ by applying 12 hour's motion. The time interval from 5-30 a.m. is 12 hours. To obtain accuracy, correction due to *Second differences* according to time interval of 12 hours and $(n-l)$ which is (+) 08'11" is to be taken. From the Table given above, we get *second difference correction* as (–) 0'·30". The correction will be of opposite sign to $(n-l)$. So the final result is $10^S\ 13°\ 53'\ 00"$ on Jan. 10 at 5-30 p.m. I.S.T. which tallies with the actual figure.

Diagram showing Movement of Planets into Nirayana Signs *(Rasi)*, 2019



Movement and Visibility of Planets, 2019

Mercury (☿) can only be seen low in the east before sunrise or low in the west after sunset. It is visible in the evening sky between the following approximate dates : Feb. 12 to Mar.8, May 28 to Jul.10, Sep.22 to Nov.3, 2019. The planet is brighter at the beginning of each period. At the beginning of the year it is in ***Dhanus Rasi*** (*constellation of Sagittarius*) and moving through different Rasis remain in *same Rasi* (*Sagittarius*) at the end of the year. It is visible in the morning sky between the following approximate dates : upto Jan. 9, Mar. 21 to May 8, Jul. 29 to Aug. 24, Nov.16 to Dec.21.The Planet is brighter at the end of each period. Mercury is Retrograde from Mar.5 to Mar.28, Jul.7 to Aug. 1,Oct.31 to Nov.20. Mercury is in Conjunction with Venus on Jul.25, Sep.13 and Oct. 30, with Mars on Jun. 18, Jul.8 and Sep.3with Saturn on Jan.13, 2019.

Venus (♀) is a brilliant object in the morning sky from the beginning of the year until the second week of July where is becomes too close to the Sun for observation. It reappears in the second half of September in the evening sky where it stays until the end of the year. Venus is in Direct motion throughout the year. It is in Conjunction with Mercury on Jul. 25, Sep. 13 and Oct. 30, with Mars on Aug.24, with Jupiter on Jan.22 and Nov.24, with Saturn on Jan.22, Feb.18 and Dec.11, 2019. At the beginning of the year it is in ***Vriscika Rasi (Scorpio)*** and moving through different ***Rasis*** it is in ***Makara Rasi(Capricornus)*** at the end of the year. It attains maximum brilliancy of – 4·6 from Jan. 2 to Jan.7, 2019.

Mars (♂) is visible in the evening sky at the beginning of the year. It becomes too close to the Sun for observation in the middle of July. It reappears in the morning sky on third week of October. At the beginning of the year it is in ***Mina Rasi*** (*Pisces*) and moving through different ***Rasis*** it is in ***Vriscika Rasi*** (*Scorpio*) at the end of the year. It is in Conjunction with Sun on Sep. 2, with Mercury on Jun.18,Jul.8 and Sep. 3, with Venus on Aug.24. It is in 6°.54' N of Aldebaran on Apr. 16,5°.60' S of Pollux on Jun. 23,0°.70' N of Regulus on Aug. 17 and 3°.06' N of Spica on Nov.8. It is in Direct motion throughout the year.

Jupiter (♃) is visible in the morning sky at the beginning of the year. It is in opposition with Sun on Jun. 10, when it is visible throughout the night. From early September it can only be seen in the evening sky and from middle of December it becomes too close to the sun for observation. Jupiter is Retrograde on Apr.10 and Direct on Aug.11. At the beginning of the year it is in ***Vriscika Rasi (Scorpio)*** and enters into ***Dhanus Rasi*** (*Sagittarius*) at the last weak of March, and it re-enters again ***Vriscika Rasi*** at the last weak of April and moving through different rasis, it is enters agian ***Dhanus Rasi*** at the first weak of November. It is in Conjunction with Mercury on Jul. 25, Sep.13 and Oct.30, with Mars on Aug.24, with Venus on Jan.22 and Nov. 24, with Saturn on Feb.18 and Dec.11,2019.

Saturn (♄) is too close to the Sun for observation from the beginning of the year. It is in Opposition on Jul. 9 when it can be seen throughout the night. From early October until late December it can only be seen in the evening sky and is too close to the Sun for observation for the remaining year. It is Retrograde on Apr. 30 and Direct on Sep.18. Saturn remains in ***Dhanus Rasi (Sagittarius)*** during the year. It is in Conjunction with Mercury on Jan.13 and with Venus on Jan.22, Feb.18 and Dec.11,2019.

Uranus, Neptune and Pluto are not visible in the naked eye.

Planets at Minimum and Maximum distances from the Earth, 2019

Nearest to the Earth (Near about opposition with the Sun)				Farthest from the Earth (Near about conjunction with the Sun)			
Planet	Date	True Distance	Potency	Planet	Date	True Distance	Potency
	d h m				*d h m*		
Sun	Jan. 3 22 46	0·983	1·000	Sun	Jul. 5 11 15	1·016	0·967
Mercury	Jan. 30 28 39	1.407	0.389	Mercury	Mar. 16 08 15	0.613	0.893
	May 21 25 42	1·322	0·414		Jul. 21 27 43	0·580	0·944
	Sep. 5 06 42	1·373	0·399		Nov. 11 24 28	0·674	0·813
Venus	Aug. 14 27 46	1.731	0.152	Venus	–	–	–
Mars	Sep. 2 26 16	2.674	0.139	Mars	–	–	–
Jupiter	Dec. 27 26 29	6·212	0·636	Jupiter	Jun. 11 10 56	4·284	0·922
Saturn	Jun. 2 22 58	11.043	0·727	Saturn	Jul. 9 25 45	9·032	0·890

Note:— The distance are in units of the mean distance of the Sun from the Earth taken as 1·000.

Potency or power of a planet that it exerts on us is taken as 1.00 when at the minimum possible distance from the Earth and decreases inversely as the distance increases. The least distance adopted are : Sun 0·983, Mercury 0·548, Venus 0·264, Mars 0·372 , Jupiter 3·951 and Saturn 8·039.

One astronomical unit is 149,597,870 k.m. (the average distance between the Earth and the Sun). Mean distance ofthe Sun from the Earth is 930 lakh miles.

Time to reach light on Earth from the Sun is about 8·3 minutes and from Moon is about 1·² seconds.

Advance Ephemeris, 2020

Nirayana Longitudes of Planets at 5-29 a.m. I. S. T.

Date	Sun ☉	Moon ☽	Moon ☽ 5 days later	Mercury ☿	Venus ♀	Mars ♂	Jupiter ♃
	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '
Jan. 1	8 15 53	10 22 00	0 22 06	8 10 15	9 20 17	7 04 15	8 12 32
11	8 26 04	2 28 36	5 10 49	8 26 17	10 02 29	7 11 00	8 14 50
21	9 06 15	7 19 59	9 23 47	9 13 02	10 14 36	7 17 46	8 17 06
31	9 16 25	11 23 43	1 25 20	10 00 11	10 26 36	7 24 35	8 19 19
Feb. 10	9 26 34	4 06 04	6 19 42	10 14 44	11 08 24	8 01 25	8 21 27
20	10 06 40	8 25 38	10 26 32	10 18 00	11 20 00	8 08 17	8 23 30
Mar. 1	10 16 44	0 26 03	3 00 20	10 08 40	0 01 18	8 15 11	8 25 25
11	10 26 44	5 14 45	7 26 50	10 04 07	0 12 14	8 22 06	8 27 10
21	11 06 42	9 29 34	11 29 07	10 09 09	0 22 40	8 29 02	8 28 45
31	11 16 36	1 29 41	4 07 30	10 19 52	1 02 27	9 05 59	9 00 08
Apr. 10	11 26 27	6 23 15	9 01 52	11 03 59	1 11 19	9 12 56	9 01 17
20	0 06 14	11 02 24	1 02 08	11 20 49	1 18 52	9 19 53	9 02 10
30	0 15 59	3 05 15	5 16 20	0 10 19	1 24 33	9 26 48	9 02 46
May 10	0 25 40	8 00 15	10 05 09	1 01 46	1 27 30	10 03 41	9 03 04
20	1 05 18	0 04 46	2 06 18	1 21 54	1 26 48	10 10 30	9 03 03
30	1 14 55	4 13 00	6 25 21	2 07 31	1 22 22	10 17 14	9 02 44
Jun. 9	1 24 29	9 05 21	11 07 19	2 17 27	1 16 15	10 23 49	9 02 06
19	2 04 03	1 07 24	3 12 18	2 20 36	1 11 58	11 00 15	9 01 13
29	2 13 35	5 22 17	8 03 05	2 16 53	1 11 27	11 06 25	9 00 07
Jul. 9	2 23 07	10 08 52	0 09 03	2 11 49	1 14 28	11 12 18	8 28 53
19	3 02 39	2 11 04	4 20 21	2 13 20	1 20 06	11 17 46	8 27 36
29	3 12 12	7 01 33	9 09 00	2 23 45	1 27 31	11 22 43	8 26 21
Aug. 8	3 21 46	11 11 19	1 11 02	3 11 25	2 06 11	11 27 00	8 25 14
18	4 01 22	3 16 31	5 29 37	4 01 46	2 15 44	0 00 26	8 24 19
28	4 11 01	8 09 23	10 13 18	4 20 49	2 25 56	0 02 49	8 23 40
Sep. 7	4 20 41	0 13 23	2 24 07	5 07 45	3 06 37	0 03 56	8 23 19
17	5 00 25	4 23 58	7 08 31	5 22 41	3 17 41	0 03 38	8 23 17
27	5 10 12	9 15 18	11 16 26	6 05 29	3 29 04	0 01 55	8 23 34
Oct. 7	5 20 02	1 15 46	3 19 02	6 14 55	4 10 42	11 29 09	8 24 11
17	5 29 56	6 02 36	8 15 45	6 16 57	4 22 33	11 25 59	8 25 04
27	6 09 53	10 19 26	0 19 01	6 07 07	5 04 34	11 23 14	8 26 14
Nov. 6	6 19 53	2 19 21	4 26 04	6 02 13	5 16 43	11 21 31	8 27 38
16	6 29 56	7 10 59	9 20 58	6 12 01	5 29 00	11 21 07	8 29 15
26	7 10 02	11 22 11	1 21 48	6 26 48	6 11 21	11 22 01	9 01 03
Dec. 6	7 20 10	3 24 52	6 04 38	7 12 22	6 23 47	11 24 03	9 03 00
16	8 00 20	8 18 04	10 24 22	7 28 01	7 06 15	11 27 01	9 05 05
26	8 10 31	0 24 08	2 25 38	8 13 53	7 18 45	0 00 43	9 07 17
31	8 15 37	2 25 38	—	8 21 57	7 25 01	0 02 47	9 08 25
32	8 16 38	3 08 35	—	8 23 34	7 26 16	0 03 13	9 08 38

Jupiter enters in *Makara Rasi* in the month of March. It enters in *Dhanu Rasi* in the month of July and again enters in *Makara Rasi* in the month of November.

Advance Ephemeris, 2020

Nirayana Longitudes of Planets at 5-29 a.m. I. S. T.

Date	Saturn ♄	Uranus ♅	Neptune ♆	Pluto ♇	Rahu (True)	☊ (Mean)	True Ayanamsa
	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	° ' "
Jan. 1	8 27 16	0 08 34	10 22 08	8 28 15	2 14 16	2 14 06	24 07 55
11	8 28 26	0 08 31	10 22 11	8 28 35	2 14 19	2 13 35	24 07 57
21	8 29 37	0 08 34	10 22 37	8 28 55	2 14 13	2 13 03	24 07 58
31	9 00 48	0 08 41	10 22 55	8 29 15	2 13 44	2 12 31	24 08 00
Feb. 10	9 01 56	0 08 54	10 23 15	8 29 34	2 13 33	2 11 59	24 08 01
20	9 03 01	0 09 12	10 23 36	8 29 51	2 13 06	2 11 27	24 08 02
Mar. 1	9 04 02	0 09 33	10 23 59	9 00 07	2 11 42	2 10 56	24 08 03
11	9 04 57	0 09 59	10 24 21	9 00 21	2 10 58	2 10 24	24 08 04
21	9 05 47	0 10 27	10 24 44	9 00 33	2 10 17	2 09 52	24 08 06
31	9 06 29	0 10 58	10 25 06	9 00 42	2 08 37	2 09 20	24 08 06
Apr. 10	9 07 02	0 11 31	10 25 27	9 00 48	2 07 39	2 08 49	24 08 07
20	9 07 28	0 12 05	10 25 46	9 00 51	2 07 04	2 08 17	24 08 08
30	9 07 43	0 12 40	10 26 03	9 00 51	2 06 08	2 07 45	24 08 10
May 10	9 07 49	0 13 14	10 26 18	9 00 48	2 05 32	2 07 13	24 08 11
20	9 07 45	0 13 47	10 26 31	9 00 43	2 05 17	2 06 41	24 08 12
30	9 07 32	0 14 19	10 26 40	9 00 35	2 05 07	2 06 10	24 08 14
Jun. 9	9 07 10	0 14 49	10 26 46	9 00 25	2 04 59	2 05 38	24 08 16
19	9 06 40	0 15 16	10 26 49	9 00 13	2 04 59	2 05 06	24 08 17
29	9 06 04	0 15 39	10 26 49	9 00 00	2 04 57	2 04 34	24 08 19
Jul. 9	9 05 22	0 15 59	10 26 45	8 29 46	2 04 52	2 04 02	24 08 21
19	9 04 39	0 16 14	10 26 39	8 29 31	2 04 51	2 03 31	24 08 23
29	9 03 54	0 16 25	10 26 29	8 29 17	2 04 28	2 02 59	24 08 24
Aug. 8	9 03 12	0 16 32	10 26 18	8 29 03	2 03 47	2 02 27	24 08 26
18	9 02 34	0 16 33	10 26 04	8 28 51	2 03 27	2 01 55	24 08 27
28	9 02 01	0 16 29	10 25 49	8 28 40	2 02 40	2 01 23	24 08 28
Sep. 7	9 01 36	0 16 21	10 25 32	8 28 31	2 01 10	2 00 52	24 08 29
17	9 01 19	0 16 08	10 25 16	8 28 25	2 00 28	2 00 20	24 08 30
27	9 01 12	0 15 51	10 25 00	8 28 21	1 29 41	1 29 48	24 08 32
Oct. 7	9 01 15	0 15 31	10 24 44	8 28 21	1 28 06	1 29 16	24 08 32
17	9 01 27	0 15 08	10 24 31	8 28 23	1 27 25	1 28 44	24 08 33
27	9 01 50	0 14 44	10 24 19	8 28 28	1 27 01	1 28 13	24 08 34
Nov. 6	9 02 21	0 14 19	10 24 10	8 28 36	1 26 13	1 27 41	24 08 36
16	9 03 01	0 13 55	10 24 04	8 28 47	1 25 55	1 27 09	24 08 37
26	9 03 49	0 13 33	10 24 01	8 29 00	1 25 54	1 26 37	24 08 39
Dec. 6	9 04 44	0 13 13	10 24 02	8 29 15	1 25 48	1 26 05	24 08 41
16	9 05 44	0 12 56	10 24 06	8 29 32	1 25 48	1 25 34	24 08 43
26	9 06 48	0 12 44	10 24 14	8 29 51	1 25 48	1 25 02	24 08 44
31	9 07 22	0 12 40	10 24 19	9 00 00	1 25 47	1 24 46	24 08 46
32	9 07 29	0 12 39	10 24 20	9 00 02	1 25 45	1 24 43	24 08 46

Saturn enters in ***Makara Rasi*** in the end of January.

Rising and Setting of Planets in I.S.T. 2019 A.D.

CHENNAI (Latitude 13° N 04')

Date	Sun rise	Sun set	Mercury		Venus		Mars		Jupiter		Saturn	
	Upper Limb		Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
Jan. 1	6 31	17 54	5 25	16 39	3 10	14 42	11 27	23 27	4 30	15 46	6 37	17 53
11	6 35	18 00	5 52	17 04	3 14	14 42	11 09	23 15	3 59	15 15	6 03	17 19
21	6 36	18 05	6 21	17 35	3 21	14 45	10 52	23 02	3 28	14 44	5 29	16 45
31	6 36	18 10	6 47	18 11	3 31	14 51	10 35	22 51	2 57	14 13	4 54	16 10
Feb. 10	6 34	18 14	7 11	18 47	3 40	15 00	10 18	22 38	2 24	13 40	4 19	15 35
20	6 30	18 16	7 28	19 18	3 51	15 11	10 03	22 27	1 51	13 07	3 44	15 00
Mar. 2	6 25	18 18	7 20	19 22	3 59	15 23	9 47	22 17	1 18	12 32	3 09	14 25
12	6 19	18 20	6 29	18 33	4 05	15 37	9 32	22 06	0 43	11 57	2 33	13 49
22	6 13	18 20	5 26	17 20	4 11	15 47	9 17	21 55	0 07	11 21	1 56	13 12
Apr. 1	6 06	18 21	4 49	16 37	4 15	15 57	9 05	21 45	23 30	10 44	1 19	12 35
11	6 00	18 22	4 36	16 26	4 19	16 07	8 51	21 35	22 51	10 05	0 42	11 58
21	5 54	18 23	3 37	16 35	4 19	16 17	8 39	21 25	22 11	9 25	0 01	11 21
May 1	5 49	18 24	4 48	16 58	4 20	16 26	8 27	21 15	21 30	8 44	23 22	10 42
11	5 46	18 26	5 09	17 33	4 21	16 37	8 15	21 05	20 47	8 01	22 44	10 00
21	5 43	18 29	5 46	18 24	4 25	16 47	8 04	20 54	20 04	7 18	22 04	9 20
31	5 42	18 32	6 32	19 22	4 29	16 59	7 54	20 42	19 19	6 33	21 23	8 39
Jun. 10	5 43	18 35	7 14	20 04	4 36	17 12	7 42	20 30	18 34	5 50	20 42	7 58
20	5 44	18 38	7 36	20 22	4 46	17 26	7 31	20 17	17 44	5 00	20 00	7 16
30	5 47	18 39	7 35	20 11	4 56	17 42	7 20	20 04	17 00	4 16	19 17	6 33
Jul. 10	5 50	18 40	7 04	19 34	5 10	17 56	7 10	19 48	16 16	3 32	18 35	5 51
20	5 52	18 39	6 04	18 32	5 24	18 10	6 58	19 32	15 34	2 50	17 48	5 04
30	5 55	18 37	5 03	17 35	5 41	18 19	6 45	19 17	14 52	2 08	17 06	4 22
Aug. 9	5 57	18 33	4 38	17 14	5 54	18 28	6 33	19 01	14 12	1 28	16 24	3 40
19	5 58	18 29	4 57	17 31	6 07	18 33	6 21	18 43	13 33	0 49	15 43	2 59
29	5 58	18 23	5 40	18 04	6 20	18 36	6 08	18 26	12 55	0 11	15 02	2 18
Sep. 8	5 59	18 16	6 18	18 30	6 29	18 39	5 53	18 09	12 19	23 35	14 21	1 37
18	5 59	18 09	6 50	18 46	6 41	18 39	5 40	17 50	11 44	23 00	13 43	0 57
28	5 59	18 02	7 13	18 57	6 52	18 40	5 26	17 32	11 11	22 25	13 04	0 18
Oct. 8	5 59	17 55	7 32	19 04	7 03	18 43	5 13	17 13	10 38	21 52	12 26	23 40
18	6 00	17 49	7 45	19 07	7 16	18 48	5 01	16 55	10 05	21 19	11 47	23 03
28	6 02	17 45	7 41	18 57	7 29	18 55	4 47	16 37	9 34	20 48	11 10	22 26
Nov. 7	6 05	17 42	6 48	18 10	7 46	19 02	4 35	16 19	9 03	20 17	10 34	21 50
17	6 09	17 40	5 20	16 54	8 02	19 14	4 21	16 03	8 32	19 46	9 58	21 14
27	6 13	17 41	4 51	16 25	8 08	19 18	4 10	15 46	8 02	19 16	9 23	20 39
Dec. 7	6 19	17 43	5 04	16 30	8 32	19 44	3 58	15 30	7 33	18 47	8 48	20 04
17	6 24	17 47	5 30	16 46	8 45	19 59	3 47	15 15	7 03	18 17	8 13	19 29
27	6 29	17 52	5 59	17 11	8 53	20 15	3 37	15 01	6 34	17 48	7 38	18 54
32	6 31	17 54	6 14	17 24	8 56	20 22	3 31	14 55	6 19	17 33	7 21	18 37

Visibility of MERCURY in Morning and Evening Sky

Dates of heliacal setting of Mercury

Evening			Set		Rise	Morning		
—			—	—	—	—		Jan. 9
			Jan. 10	—	Feb. 12	—		
Feb.12	—	Mar.8	Mar. 9	—	Mar. 21	Mar.21	—	May8
—			May 9	—	May 28	—		
May28	—	Jul.10	Jul. 11	—	Jul. 29	Jul.29	—	Aug.24
—			Aug. 25	—	Sep. 22	—		
Sep.22	—	Nov.3	Nov.4	—	Nov. 16	Nov.16	—	Dec.21
—			Dec. 22	—	Jan. 25 (2020)	—		

Note : The planet remains invisible to the naked eye during the period of combustion or heliacal setting.

Rising and Setting of Planets in I.S.T. 2019A.D.

MUMBAI (Latitude 18° N 58')

Date	Sun rise	Sun set	Mercury		Venus		Mars		Jupiter		Saturn	
	Upper Limb		Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
Jan. 1	7 12	18 14	6 06	16 58	3 47	15 05	11 57	23 57	5 10	16 06	7 17	18 13
11	7 15	18 21	6 33	17 23	3 54	15 02	11 38	23 46	4 39	15 35	6 43	17 39
21	7 16	18 27	7 02	17 54	4 00	15 06	11 20	23 34	4 08	15 04	6 09	17 05
31	7 14	18 33	7 26	18 32	4 11	15 11	11 02	23 24	3 37	14 33	5 34	16 30
Feb. 10	7 11	18 38	7 47	19 21	4 20	15 20	10 43	23 13	3 04	14 00	4 59	15 55
20	7 05	18 42	8 00	19 46	4 31	15 31	10 27	23 03	2 31	13 27	4 24	15 20
Mar. 2	6 59	18 46	7 50	19 52	4 38	15 44	10 09	22 55	1 59	12 51	3 49	14 45
12	6 51	18 49	6 58	19 04	4 45	15 57	9 53	22 45	1 24	12 06	3 13	14 09
22	6 43	18 51	5 57	17 49	4 49	16 09	9 37	22 35	0 48	11 40	2 36	13 32
Apr. 1	6 35	18 54	5 21	17 05	4 50	16 22	9 25	22 25	0 11	11 03	1 59	12 55
11	6 27	18 56	5 08	16 54	4 51	16 35	9 11	22 15	23 32	10 24	1 22	12 18
21	6 19	18 59	5 07	17 05	4 49	16 47	8 58	22 06	22 52	9 44	0 41	11 41
May 1	6 13	19 02	5 16	17 30	4 49	16 57	8 46	21 56	22 11	9 03	0 02	11 02
11	6 08	19 05	5 33	18 09	4 48	17 10	8 33	21 47	21 28	8 20	23 24	10 20
21	6 05	19 09	6 06	19 04	4 49	17 23	8 22	21 36	20 45	7 37	22 46	9 40
31	6 03	19 13	6 50	19 04	4 51	17 37	8 13	21 23	20 00	6 52	22 03	8 59
Jun. 10	6 03	19 16	7 32	20 46	4 57	17 51	8 01	21 11	19 14	6 10	21 22	8 18
20	6 04	19 19	7 55	21 03	5 06	18 06	7 50	20 58	18 24	5 20	20 40	7 36
30	6 07	19 21	7 56	20 50	5 15	18 23	7 40	20 44	17 40	4 36	19 57	6 53
Jul. 10	6 10	19 21	7 26	20 13	5 29	18 37	7 30	20 28	16 56	3 52	19 15	6 11
20	6 13	19 19	6 27	19 09	5 43	18 51	7 19	20 11	16 14	3 10	18 28	5 24
30	6 17	19 16	5 25	18 13	6 00	19 00	7 07	19 55	15 32	2 28	17 46	4 42
Aug. 9	6 20	19 11	4 59	17 53	6 15	19 07	6 56	19 38	14 52	1 48	17 04	4 00
19	6 22	19 05	5 18	18 10	6 30	19 10	6 45	19 19	14 13	1 09	16 23	3 19
29	6 24	18 57	6 04	18 40	6 45	19 11	6 33	19 01	13 35	0 31	15 42	2 38
Sep. 8	6 26	18 49	6 40	19 02	6 57	19 11	6 20	18 42	12 59	23 55	15 01	1 57
18	6 28	18 40	7 21	19 15	7 11	19 09	6 08	18 22	12 24	23 20	14 24	1 16
28	6 30	18 31	7 48	19 22	7 24	19 08	5 55	18 03	11 52	22 44	13 45	0 37
Oct. 8	6 32	18 23	8 09	19 27	7 38	19 08	5 43	17 43	11 19	22 11	13 07	23 59
18	6 34	18 16	8 25	19 27	7 53	19 11	5 32	17 24	10 46	21 38	12 27	23 23
28	6 38	18 09	8 21	19 17	8 09	19 15	5 19	17 05	10 15	21 07	11 50	22 46
Nov. 7	6 42	18 07	7 27	18 29	8 26	19 22	5 08	16 46	9 44	20 36	11 14	22 10
17	6 47	18 02	5 57	17 17	8 43	19 33	4 56	16 28	9 13	20 05	10 38	21 34
27	6 53	18 02	5 28	16 48	9 00	19 46	4 46	16 10	8 43	19 35	10 03	20 59
Dec. 7	6 59	18 03	5 43	16 51	9 13	20 03	4 35	15 53	8 14	19 06	9 28	20 24
17	7 05	18 06	6 10	17 06	9 26	20 18	4 25	15 37	7 44	18 36	8 53	19 49
27	7 10	18 11	6 40	17 30	9 33	20 35	4 16	15 22	7 15	18 07	8 18	19 14
32	7 12	18 14	6 56	17 42	9 35	20 43	4 10	15 16	7 00	17 52	8 01	18 57

Visibility of VENUS

Dates of heliacal setting of Venus

Evening	Set		Rise	Morning
—	—	—	—	—Jul. 22
Sep.10	Jul.22	—	Sep.9	—

Venus — Attains maximum brilliancy –4.6 from Jan.2 to Jan. 7.

Rising and Setting of Planets in I.S.T. 2019 A.D.

KOLKATA (Latitude 22° N 35')

Date	Sun rise	Sun set	Mercury		Venus		Mars		Jupiter		Saturn	
	Upper Limb		Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
	h m	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*
Jan. 1	6 16	17 05	5 10	15 48	2 49	13 57	10 54	22 54	4 14	14 56	6 21	17 03
11	6 19	17 11	5 40	16 10	2 56	13 54	10 34	22 44	3 43	14 25	5 47	16 29
21	6 19	17 18	6 06	16 44	3 03	13 57	10 16	22 32	3 12	13 54	5 13	15 55
31	6 16	17 25	6 29	17 23	3 15	14 01	9 57	22 23	2 40	13 22	4 38	15 20
Feb. 10	6 12	17 31	6 48	18 04	3 24	14 10	9 36	22 14	2 08	12 50	4 03	14 45
20	6 06	17 37	6 58	18 42	3 24	14 20	9 20	22 04	1 35	12 17	3 28	14 10
Mar. 2	5 58	17 41	6 46	18 50	3 41	14 35	9 02	21 56	1 03	11 41	2 53	13 35
12	5 50	17 45	5 55	18 01	3 47	14 49	8 45	21 47	0 28	11 06	2 17	12 59
22	5 40	17 49	4 55	16 45	3 50	15 02	8 28	21 38	23 52	10 30	1 40	12 22
Apr. 1	5 31	17 52	4 20	16 00	3 50	15 16	8 14	21 28	23 14	9 52	1 03	11 45
11	5 22	17 56	4 06	15 50	3 50	15 30	8 01	21 19	22 36	9 14	0 26	11 08
21	5 13	17 59	4 05	16 01	3 47	15 43	7 48	21 10	21 56	8 34	23 45	10 31
May 1	5 06	18 03	4 12	16 28	3 45	15 55	7 35	21 01	21 15	7 53	23 06	9 52
11	5 00	18 08	4 26	17 10	3 43	16 09	7 22	20 52	20 32	7 10	22 28	9 10
21	4 55	18 12	4 57	18 07	3 43	16 23	7 11	20 41	19 49	6 27	21 48	8 30
31	4 53	18 17	5 39	19 09	3 44	16 38	7 02	20 28	19 04	5 42	21 07	7 49
Jun. 10	4 52	18 21	6 21	19 51	3 48	16 54	6 50	20 16	18 18	5 00	20 26	7 08
20	4 54	18 23	6 45	20 07	3 54	17 12	6 40	20 02	17 28	4 10	19 44	6 26
30	4 56	18 25	6 47	19 53	4 05	17 27	6 30	19 48	16 44	3 26	19 01	5 43
Jul. 10	5 00	18 25	6 19	19 13	4 19	17 41	6 21	19 31	16 00	2 42	18 19	5 01
20	5 04	18 23	5 19	18 11	4 33	17 55	6 11	19 13	15 18	2 00	17 32	4 14
30	5 08	18 19	4 17	17 15	4 50	18 04	5 59	18 57	14 36	1 18	16 50	3 32
Aug. 9	5 12	18 13	4 00	17 06	5 07	18 09	5 48	18 40	13 56	0 38	16 08	2 50
19	5 16	18 06	4 10	17 12	5 23	18 11	5 39	18 19	13 17	23 59	15 27	2 09
29	5 19	17 57	4 57	17 41	5 38	18 12	5 27	18 01	12 39	23 21	14 46	1 28
Sep. 8	5 22	17 48	5 41	18 01	5 53	18 09	5 15	17 41	12 03	22 45	14 05	0 47
18	5 25	17 38	6 18	18 12	6 09	18 05	5 04	17 20	11 28	22 10	13 28	0 06
28	5 28	17 29	6 47	18 17	6 23	18 03	4 51	17 01	10 56	21 34	12 49	23 27
Oct. 8	5 31	17 19	7 11	18 19	6 39	18 01	4 40	16 40	10 23	21 01	12 11	22 49
18	5 35	17 10	7 28	18 18	6 55	18 03	4 30	16 20	9 50	20 28	11 31	22 13
28	5 39	17 03	7 25	18 07	7 12	18 06	4 17	16 01	9 19	19 57	10 54	21 36
Nov. 7	5 45	16 57	6 31	17 21	7 30	18 12	4 07	15 41	8 48	19 26	10 18	21 00
17	5 51	16 53	4 58	16 10	7 48	18 22	3 56	15 22	8 17	18 55	9 42	20 24
27	5 57	16 52	4 29	15 41	8 05	18 35	3 47	15 03	8 47	18 25	9 07	19 49
Dec. 7	6 04	16 53	4 45	15 43	8 18	18 52	3 37	14 45	7 18	17 56	8 32	19 14
17	6 10	16 56	5 14	15 56	8 30	19 08	3 27	14 29	6 48	17 26	7 57	18 39
27	6 15	17 01	5 45	16 19	8 36	19 26	3 19	14 13	6 19	16 57	7 22	18 04
32	6 16	17 04	6 01	16 31	8 37	19 35	3 13	14 07	6 04	16 42	7 05	17 47

Visibility of MARS

Dates of heliacal setting of Mars

Set		Rise
Jul. 11	—	Oct. 13

Rising and Setting of Planets in I.S.T. 2019 A.D.

DELHI (Latitude 28° N 39')

Date	Sun rise (Upper Limb)	Sun set (Upper Limb)	Mercury Rise	Mercury Set	Venus Rise	Venus Set	Mars Rise	Mars Set	Jupiter Rise	Jupiter Set	Saturn Rise	Saturn Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
Jan. 1	7 14	17 36	6 08	16 20	3 42	14 34	11 39	23 39	5 11	15 29	7 18	17 36
11	7 15	17 44	6 36	16 44	3 51	14 29	11 17	23 31	4 40	14 58	6 44	17 02
21	7 14	17 52	7 04	17 06	3 58	14 32	10 58	23 20	4 09	14 27	6 10	16 28
31	7 10	18 00	7 28	17 54	4 11	14 35	10 37	23 13	3 38	13 56	5 35	15 53
Feb. 10	7 04	18 08	7 40	18 42	4 20	14 44	10 16	23 04	3 05	13 23	5 00	15 18
20	6 56	18 15	7 46	19 24	4 31	14 55	9 58	22 56	2 32	12 50	4 25	14 43
Mar. 2	6 46	18 22	7 31	19 35	4 36	15 10	9 38	22 50	2 01	12 13	3 50	14 08
12	6 35	18 28	6 39	18 47	4 42	15 24	9 20	22 42	1 26	11 38	3 14	13 32
22	6 24	18 33	5 52	18 38	4 42	15 40	9 02	22 34	0 50	11 02	2 37	12 55
Apr. 1	6 12	18 39	5 08	16 42	4 40	15 56	8 51	22 25	0 13	10 25	2 00	12 18
11	6 01	18 41	4 54	16 32	4 38	17 12	8 34	22 16	23 34	9 46	1 23	11 41
21	5 51	18 50	4 50	16 46	4 32	17 28	8 20	22 08	22 54	9 06	0 41	11 05
May 1	5 42	18 56	4 54	17 16	4 28	17 42	8 07	21 59	22 13	8 25	0 02	10 26
11	5 34	19 02	5 04	18 02	4 23	17 59	7 53	21 15	21 30	7 42	23 25	9 43
21	5 29	19 08	5 31	19 03	4 21	18 15	7 42	21 40	20 47	6 59	22 45	9 03
31	5 25	19 14	6 10	20 08	4 20	18 32	7 34	21 26	20 02	6 14	22 04	8 22
Jun. 10	5 24	19 18	6 52	20 50	4 23	17 49	7 22	21 14	19 15	5 33	21 23	7 41
20	5 25	19 22	7 17	21 05	4 27	17 09	7 12	21 00	18 25	4 43	20 41	6 59
30	5 28	19 23	7 25	20 48	4 37	18 25	7 03	20 45	17 41	3 59	19 58	6 16
Jul. 10	5 32	19 22	6 55	20 07	4 41	18 29	6 55	20 27	16 57	3 15	19 16	5 34
20	5 37	19 19	5 56	19 04	5 05	18 53	6 46	20 08	16 15	2 33	18 29	4 47
30	5 42	19 14	5 52	18 10	5 24	19 00	6 34	19 52	15 33	1 51	17 47	4 05
Aug. 9	5 48	19 06	4 25	17 51	5 42	19 04	6 25	19 33	14 53	1 11	17 05	3 23
19	5 53	18 57	4 45	18 07	6 01	19 03	6 17	19 11	14 14	0 32	16 24	2 42
29	5 58	18 47	5 35	18 33	6 20	19 00	6 07	18 51	13 36	23 54	15 43	2 01
Sep. 8	6 03	18 35	6 23	18 49	6 35	18 57	5 53	18 29	13 00	23 18	15 02	1 20
18	6 08	18 23	7 04	18 56	6 54	18 50	5 46	18 08	12 25	22 43	14 26	0 38
28	6 12	18 12	7 37	18 57	7 11	18 45	5 34	17 48	11 54	22 06	13 47	23 59
Oct. 8	6 18	18 00	8 04	18 56	7 29	18 41	5 25	17 25	11 21	21 33	13 09	23 21
18	6 23	17 52	8 24	18 52	7 48	18 40	5 17	17 03	10 48	21 00	12 28	22 46
28	6 30	17 41	8 22	18 40	8 07	18 41	5 05	16 43	10 17	20 29	11 51	22 09
Nov. 7	6 37	17 33	7 17	17 55	8 27	18 45	4 57	16 21	9 46	19 58	11 15	21 33
17	6 45	17 28	5 50	17 48	8 46	18 54	4 46	16 02	9 15	19 27	10 39	21 57
27	6 53	17 25	5 21	16 19	9 04	19 06	4 39	15 41	8 45	18 57	10 04	20 22
Dec. 7	7 00	17 25	5 40	16 18	9 16	19 24	4 30	15 22	8 16	18 28	9 29	19 47
17	7 07	17 28	6 11	16 29	9 28	19 40	4 22	15 04	7 46	17 58	8 54	19 12
27	7 12	17 33	6 43	16 51	9 32	20 00	4 14	14 48	7 17	17 29	8 19	18 37
32	7 14	17 36	7 08	17 10	9 32	20 10	4 08	14 42	7 02	17 14	8 02	18 20

Visibility of JUPITER and SATURN

Dates of heliacal setting

JUPITER

Set — Rise

Dec. 16 — Jan. 9 (2020)

Visual magnitude varies from −1.8 to −2.6. Maximum −2.6 attains from May 27 to Jul 6.

SATURN

Set — Rise

Dec. 19 (2018) — Jan. 17

Dec. 30 — Jan. 30 (2020)

Visual magnitude varies from +0.1 to +0.6. Maximum +0.6 attains from Nov. 3 to Dec. 23.

Heliocentric Longitudes *(Nirayana)* of Planets, 2019

(To obtain *Sayana or Tropical Longitudes add* value of Ayanamsa)

Date	Saturn ♄	Jupiter ♃	Mars ♂	Sun ☉	Venus ♀	Venus ♀ 5 days later	Mercury ☿	Mercury ☿ 5 days later
	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '
Jan. 0	8 17 21	7 12 33	0 16 59	2 15 08	3 24 34	4 02 41	6 18 35	7 03 06
10	8 17 39	7 13 21	0 22 40	2 25 20	4 10 49	4 18 56	7 17 00	8 00 44
20	8 17 57	7 14 08	0 28 16	3 05 31	4 27 03	5 05 09	8 14 45	8 29 28
30	8 18 15	7 14 55	1 03 46	3 15 42	5 13 14	5 21 09	9 15 25	10 03 13
Feb. 9	8 18 33	7 15 42	1 09 11	3 25 49	5 29 33	6 07 25	10 23 33	11 17 12
19	8 18 51	7 16 30	1 14 30	4 05 56	6 15 26	6 23 26	0 14 33	1 15 02
Mar. 1	8 19 10	7 17 17	1 19 44	4 16 00	7 01 25	7 09 23	2 16 29	3 16 01
11	8 19 28	7 18 04	1 24 52	4 26 01	7 17 21	7 25 17	4 11 53	5 03 34
21	8 19 46	7 18 52	1 29 55	5 05 58	8 03 12	8 11 08	5 22 49	6 09 28
31	8 20 04	7 19 39	2 04 54	5 15 53	8 19 02	8 26 57	6 24 35	7 08 48
Apr. 10	8 20 22	7 20 27	2 09 47	5 25 44	9 04 51	9 12 45	7 22 35	8 06 23
20	8 20 40	7 21 15	2 14 37	6 05 32	9 20 40	9 28 35	8 20 37	9 05 47
30	8 20 58	7 22 03	2 19 23	6 15 16	10 06 30	10 14 25	9 22 24	10 11 08
May 10	8 21 16	7 22 50	2 24 05	6 24 58	10 22 21	11 00 18	11 02 44	11 27 52
20	8 21 34	7 23 38	2 28 43	7 04 37	11 08 15	11 16 12	0 26 39	1 27 51
30	8 21 52	7 24 26	3 03 19	7 14 13	11 24 10	0 02 09	2 28 51	3 27 01
Jun. 9	8 22 10	7 25 14	3 07 52	7 23 48	0 10 09	0 18 09	4 21 16	5 11 55
19	8 22 29	7 26 02	3 12 22	8 03 21	0 26 09	1 04 11	5 29 48	6 15 45
29	8 22 47	7 26 50	3 16 51	8 12 53	1 12 13	1 20 15	7 00 27	7 14 24
Jul. 9	8 23 04	7 27 37	3 21 16	8 22 25	1 28 19	2 06 23	7 28 09	8 12 04
19	8 23 23	7 28 26	3 25 41	9 01 57	2 14 28	2 22 34	8 26 37	9 12 18
29	8 23 40	7 29 14	4 00 04	9 11 30	3 00 41	3 08 48	9 29 42	10 19 30
Aug. 8	8 23 58	8 00 02	4 04 27	9 21 04	3 16 55	3 25 02	11 12 28	0 09 08
18	8 24 16	8 00 51	4 08 50	10 00 40	4 03 10	4 11 18	10 09 08	2 10 38
28	8 24 34	8 01 39	4 13 11	10 10 18	4 19 25	4 27 32	3 10 43	4 07 19
Sep. 7	8 24 52	8 02 28	4 17 34	10 19 59	5 05 38	5 13 43	5 00 02	5 19 27
17	8 25 11	8 03 16	4 21 56	10 29 42	5 21 48	5 29 51	6 06 28	6 21 49
27	8 25 29	8 04 05	4 26 19	11 09 29	6 08 53	6 15 55	7 06 10	7 20 00
Oct. 7	8 25 47	8 04 54	5 00 43	11 19 19	6 24 55	7 01 54	8 03 45	8 17 53
17	8 26 05	8 05 42	5 05 08	11 29 12	7 09 52	7 17 49	9 02 50	9 19 07
27	8 26 23	8 06 31	5 09 35	0 09 09	7 25 45	8 03 40	10 07 24	10 28 24
Nov. 6	8 26 41	8 07 20	5 14 04	0 19 09	8 11 35	8 19 30	11 22 51	0 20 59
16	8 26 59	8 08 09	5 18 35	0 29 12	8 27 25	9 05 19	1 22 55	2 23 10
26	8 27 18	8 08 58	5 23 09	1 09 17	9 13 13	9 21 08	3 22 00	4 17 00
Dec. 6	8 27 36	8 09 47	5 27 46	1 19 26	9 29 02	10 07 58	5 08 16	5 26 37
16	8 27 54	8 10 37	6 02 25	1 29 35	10 15 53	10 22 49	6 12 52	6 27 45
26	8 28 12	8 11 26	6 07 09	2 09 46	11 00 46	11 08 43	7 11 49	7 25 34
31	8 28 21	8 11 50	6 09 32	2 14 52	11 08 43	—	7 25 34	—
32	8 28 23	8 11 55	6 10 00	2 16 53	11 10 18	—	7 28 19	—
	Jan. 0	Mar. 1	Apr. 30	June 29	Aug. 28	Oct. 27	Dec. 26	Dec. 32
	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '
URANUS	0 07 11	0 07 51	0 08 30	0 09 11	0 09 48	0 10 28	0 11 07	0 11 11
NEPTUNE	10 21 39	10 22 01	10 22 23	10 22 45	10 23 06	10 23 28	10 23 50	10 23 52

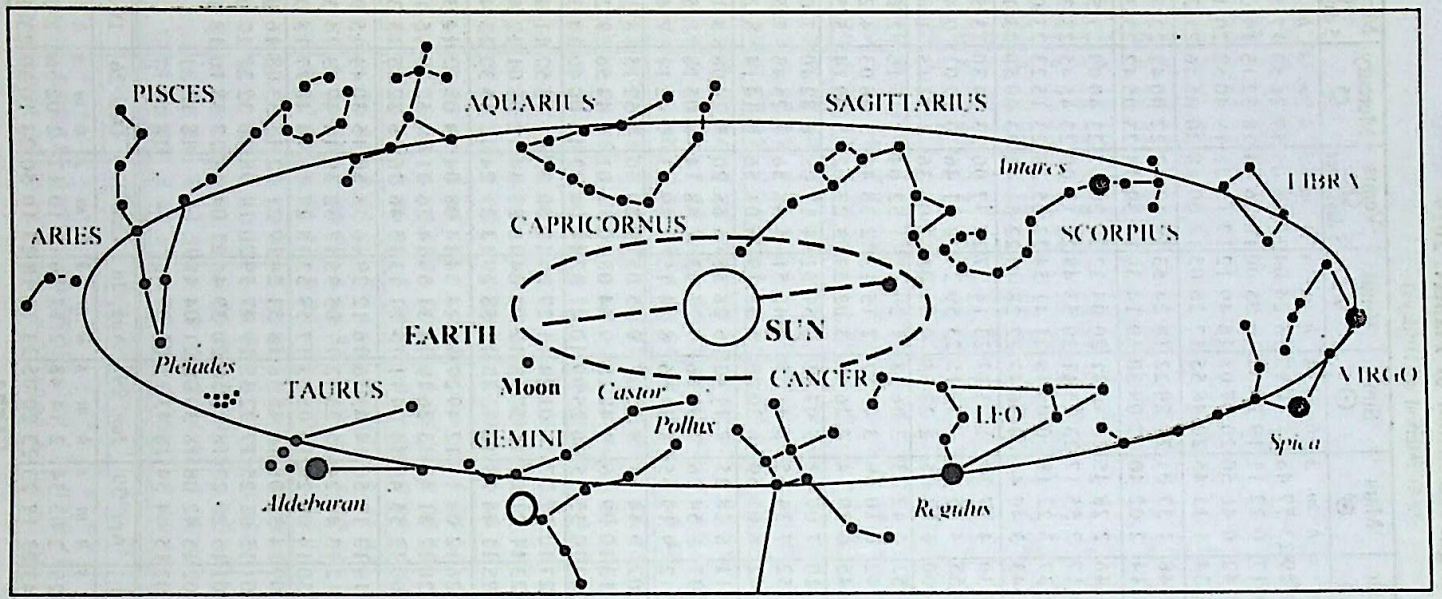
Right Ascension of Planets, 2019

(At interval of 10 days)

Date	Saturn ♄	Jupiter ♃	Mars ♂	Sun ☉	Venus ♀	Venus ♀ 5 days later	Mercury ☿	Mercury ☿ 5 days later
	h m s	*h m s*	*h m s*	*h m s*	*h m s*	*h m s*	*h m s*	*h m s*
Jan. 0	18 48 47	16 40 29	23 57 48	18 40 12	15 24 04	15 44 05	17 26 57	17 59 00
10	18 53 53	16 49 17	0 22 11	19 24 08	16 05 00	16 26 44	18 32 13	19 06 15
20	18 58 54	16 57 42	0 46 50	20 07 08	16 49 12	17 12 21	19 40 52	20 15 49
30	19 03 46	17 05 34	1 11 45	20 48 55	17 36 05	18 00 18	20 05 56	21 26 00
Feb. 9	19 08 24	17 12 48	1 37 01	21 29 22	18 24 53	18 49 42	22 00 42	22 34 24
19	19 12 43	17 19 14	2 02 40	22 08 30	19 14 39	19 39 38	23 05 42	23 31 55
Mar. 1	19 16 39	17 24 46	2 28 45	22 46 31	20 04 32	20 29 17	23 49 09	23 53 51
11	19 20 06	17 29 17	2 55 17	23 23 41	20 53 48	21 18 00	23 45 45	23 30 02
21	19 23 03	17 32 37	3 22 18	0 00 18	21 41 54	22 05 28	23 15 23	23 08 07
31	19 25 24	17 34 43	3 49 44	0 36 43	22 28 44	22 51 43	23 09 50	23 19 15
Apr. 10	19 27 07	17 35 30	4 17 34	1 13 17	23 14 27	23 37 00	23 34 30	23 54 05
20	19 28 09	17 34 55	4 45 44	1 50 15	23 59 24	0 21 46	0 17 01	0 42 47
30	19 28 31	17 33 00	5 14 05	2 27 55	0 44 08	1 06 36	1 11 15	1 42 36
May 10	19 28 10	17 29 53	5 42 33	3 06 28	1 29 13	1 52 04	2 17 16	2 55 43
20	19 27 10	17 25 42	6 10 59	3 45 57	2 15 13	2 38 44	3 38 03	4 23 10
30	19 25 32	17 20 45	6 39 14	4 26 19	3 02 39	3 27 02	5 09 14	5 53 02
Jun. 9	19 23 22	17 15 20	7 07 12	5 07 25	3 51 51	4 17 08	6 32 40	7 07 04
19	19 20 45	17 09 52	7 34 45	5 48 55	4 42 51	5 08 56	7 25 43	7 58 15
29	19 17 48	17 04 42	8 01 50	6 30 29	5 35 19	6 01 56	8 14 14	8 23 03
Jul. 9	19 14 42	17 00 11	8 28 25	7 11 43	6 28 38	6 55 20	8 24 08	8 17 36
19	19 11 34	16 56 37	8 54 26	7 52 16	7 21 53	7 48 14	8 05 18	7 51 36
29	19 08 35	16 54 12	9 19 55	8 31 56	8 14 15	8 39 53	7 42 11	7 41 40
Aug. 8	19 05 53	16 53 02	9 44 54	9 10 37	9 05 05	9 29 50	7 52 15	8 13 56
18	19 03 37	16 53 13	10 09 26	9 48 18	9 54 08	10 18 01	8 44 56	9 21 51
28	19 01 53	16 54 42	10 33 35	10 25 09	10 41 32	11 04 43	10 00 40	10 38 28
Sep. 7	19 00 46	16 57 27	10 57 27	11 01 24	11 27 39	11 50 25	11 13 57	11 47 01
17	19 00 20	17 01 23	11 21 05	11 37 18	12 03 04	12 35 44	12 08 01	12 47 25
27	19 00 36	17 06 25	11 44 38	12 13 13	12 58 29	13 21 24	13 15 32	13 42 40
Oct. 7	19 01 34	17 12 26	12 08 11	12 49 27	13 44 34	14 08 04	14 08 52	14 33 57
17	19 03 14	17 19 20	12 31 49	13 26 19	14 31 59	14 56 21	14 57 20	15 17 46
27	19 05 32	17 27 00	12 55 40	14 04 11	15 21 13	15 46 36	15 32 55	15 38 48
Nov. 6	19 08 26	17 35 19	13 19 50	14 43 16	16 12 29	16 38 50	15 30 44	15 09 08
16	19 11 52	17 44 12	13 44 24	15 23 42	17 05 35	17 32 39	14 47 03	14 39 32
26	19 15 46	17 53 30	14 09 29	16 05 33	17 59 53	18 27 11	14 48 17	15 07 44
Dec. 6	19 20 04	18 03 09	14 35 08	16 48 38	18 54 24	19 21 22	15 33 08	16 01 52
16	19 24 40	18 13 01	15 01 25	17 32 35	19 47 59	20 14 08	16 32 38	17 04 51
26	19 29 29	18 23 01	15 28 23	18 16 58	20 39 46	21 04 48	17 38 10	18 12 21
31	19 31 58	18 28 02	15 42 08	18 39 08	21 04 48	—	18 12 21	—
32	19 32 28	18 29 02	15 44 54	18 43 33	21 09 45	—	18 19 17	—

	Jan. 0	Mar. 1	Apr. 30	Jun. 29	Aug. 28	Oct. 27	Dec. 26	Dec. 32
	h m s	*h m s*	*h m s*	*h m s*	*h m s*	*h m s*	*h m s*	*h m s*
URANUS	1 47 09	1 51 29	2 03 34	2 14 48	2 17 26	2 10 17	2 02 56	2 02 40
NEPTUNE	23 02 46	23 09 43	23 17 23	23 20 05	23 16 18	23 10 50	23 10 39	23 11 03

YEARLY JOURNEY OF THE EARTH



The Earth whose average distance from the Sun is 93 million miles or 149.6 million kms. revolves round the Sun continuously in elliptical orbit and complete the circuit in 365.25636 days (Sidereal Period) at a speed of 18.51 miles or 29.79 km per second or roughly 66,600 miles per hour. The mean plane of the Earth's orbit around the Sun is known as *ecliptic*.

The moon makes one complete circuit of the Earth in 27.3 days (Appox.). Average distance of Moon from the Earth is 2.39 lakh miles or 3,84,400 km.

The planet Mercury which is nearest to the Sun takes only 88 days to travel right round the Sun. The time taken by other planets to travel round the Sun is Venus 225 days, Mars 1.9 years, Jupiter 11.86 years, Saturn 29.46 years, Uranus 84.02 years, Neptune 164.77 years and Pluto 248.42 years.

Tithi, Nakshatra & Yoga, 2019

The following table gives the ending moments of Tithi, Nakshatra & Yoga in I.S.T. for the year 2019. The ending moments are those as are current at 5-30 a.m. I.S.T.

Date	Tithi				Nakshatra			Yoga		
January										
		T	*h*	*m*	*N*	*h*	*m*	*Y*	*h*	*m*
1	K	11	25	29	15	08	44	8	26	41
2		12	26	11	16	09	39	9	26	03
3		13	27	21	17	11	03	10	25	47
4		14	28	58	18	12	53	11	25	50
5		30	—	—	19	15	07	12	26	12
6	K	30	06	58	20	17	43	13	26	49
7	S	1	09	19	21	20	36	14	27	38
8		2	11	54	22	23	40	15	28	35
9		3	14	39	23	26	50		...	
10		4	17	22	24	—	—	16	05	34
11		5	19	55	24	05	54	17	06	29
12		6	22	05	25	08	43	18	07	12
13		7	23	42	26	11	06	19	07	35
14		8	24	38	27	12	52	20	07	30
15		9	24	45	1	13	56	21	06	52
16		10	24	04	2	14	12	22	05	37
"			...			...		23	27	44
17		11	22	35	3	13	40	24	25	13
18		12	20	22	4	12	25	25	22	09
19		13	17	35	5	10	31	26	18	36
20		14	14	19	6	08	07	27	14	42
"			...		7	29	22		...	
21	S	15	10	46	8	26	27	1	10	33
22	K	1	07	05	9	23	32	2	06	18
"		2	27	26		...		3	26	03
23		3	23	59	10	20	47	4	21	59
24		4	20	54	11	18	21	5	18	11
25		5	18	18	12	16	25	6	14	47
26		6	16	20	13	15	04	7	11	51
27		7	15	02	14	14	25	8	09	28
28		8	14	30	15	14	28	9	07	40
29		9	14	41	16	15	14	10	06	27
30		10	15	34	17	16	40	11	05	46
31	K	11	17	02	18	18	40	12	05	34
February										
1	K	12	19	00	19	21	17	13	05	47
2		13	21	19	20	23	55	14	06	18
3		14	23	53	21	26	55	15	07	04
4	K	30	26	34	22	—	—	16	07	58
5	S	1	29	16	22	06	01	17	08	56
6		2	—	—	23	09	08	18	09	54
7		2	07	53	24	12	09	19	10	47
8		3	10	18	25	14	59	20	11	32
9		4	12	26	26	17	30	21	12	03
10		5	14	09	27	19	37	22	12	16
11		6	15	21	1	21	13	23	12	06
12		7	15	55	2	22	11	24	11	28
13		8	15	47	3	22	27	25	10	18
14	S	9	14	55	4	22	11	26	08	34

Date	Tithi				Nakshatra			Yoga		
February — *contd.*										
		T	*h*	*m*	*N*	*h*	*m*	*Y*	*h*	*m*
15	S	10	13	19	5	20	52	27	06	15
"			...			...		1	27	23
16		11	11	02	6	19	05	2	24	01
17		12	08	10	7	16	46	3	20	13
"		13	28	51		...			...	
18		14	25	12	8	14	02	4	16	06
19	S	15	21	24	9	11	03	5	11	48
20	K	1	17	37	10	08	00	6	07	28
"			...		11	29	04	7	27	12
21		2	14	02	12	26	26	8	23	11
22		3	10	50	13	24	18	9	19	33
23		4	08	11	14	22	47	10	16	24
24		5	06	14	15	22	03	11	13	51
"		6	29	05		...			...	
25		7	28	47	16	22	08	12	11	58
26		8	29	21	17	23	03	13	10	46
27		9	—	—	18	24	45	14	10	12
28	K	9	06	41	19	27	06	15	10	13
March										
1	K	10	08	39	20	—	—	16	10	42
2		11	11	05	20	05	55	17	11	30
3		12	13	45	21	09	00	18	12	30
4		13	16	29	22	12	10	19	13	32
5		14	19	07	23	15	17	20	14	31
6	K	30	21	34	24	18	13	21	15	23
7	S	1	23	44	25	20	54	22	16	02
8		2	25	35	26	23	16	23	16	28
9		3	27	03	27	25	18	24	16	38
10		4	28	07	1	26	57	25	16	30
11		5	28	44	2	28	10	26	16	03
12		6	28	50	3	28	53	27	15	13
13		7	28	23	4	29	04	1	14	00
14		8	27	22	5	28	42	2	12	19
15		9	25	45	6	27	44	3	10	11
16		10	23	33	7	26	13	4	07	35
"			...			...		5	28	31
17		11	20	51	8	24	11	6	25	04
18		12	17	44	9	21	46	7	21	17
19		13	14	19	10	19	05	8	17	17
20		14	10	45	11	16	17	9	13	11
21	S	15	07	13	12	13	34	10	09	07
"	K	1	27	53		...		11	29	14
22		2	24	56	13	11	06	12	25	41
23		3	22	33	14	09	05	13	22	35
24		4	20	52	15	07	41	14	20	04
25		5	20	00	16	07	03	15	18	13
26		6	20	02	17	07	15	16	17	03
27		7	20	55	18	08	19	17	16	34
28		8	22	34	19	10	10	18	16	41
29		9	24	48	20	12	41	19	17	17
30		10	27	23	21	15	38	20	18	12
31	K	11	—	—	22	18	46	21	19	15

The numbers of *tithis* have been shown from *Sukla* 1 to *Sukla* 15 (Full-Moon) and again from *Krishna 1* to *Krishna 14* and then *K 30* (New Moon) using the symbols S for *Sukla Paksha* and K for *Krishna Paksha.*

Tithi, Nakshatra & Yoga, 2019 Contd.

Date	Tithi				Nakshatra			Yoga		
April										
		T	*h*	*m*	*N*	*h*	*m*	*Y*	*h*	*m*
1	K	11	06	04	23	21	54	22	20	17
2		12	08	39	24	24	49	23	21	10
3		13	10	57	25	27	25	24	21	47
4		14	12	51	26	—	—	25	22	07
5	K	30	14	21	26	05	36	26	22	07
6	S	1	15	24	27	07	22	27	21	47
7		2	16	02	1	08	44	1	21	08
8		3	16	16	2	09	43	2	20	10
9		4	16	07	3	10	19	3	18	56
10		5	15	36	4	10	33	4	17	23
11		6	14	42	5	10	25	5	15	32
12		7	13	24	6	09	54	6	13	22
13		8	11	42	7	08	59	7	10	53
14		9	09	36	8	07	40	8	08	05
"			...			...		9	28	59
15		10	07	08	9	05	59	10	25	38
"		11	28	23	10	28	01		...	
16		12	25	26	11	25	50	11	22	07
17		13	22	24	12	23	36	12	18	31
18		14	19	27	13	21	25	13	14	57
19	S	15	16	42	14	19	29	14	11	32
20	K	1	14	21	15	17	58	15	08	25
21		2	12	33	16	17	01	16	05	42
"			...			...		17	27	31
22		3	11	25	17	16	45	18	25	55
23		4	11	04	18	17	16	19	24	59
24		5	11	32	19	18	35	20	24	39
25		6	12	47	20	20	37	21	24	53
26		7	14	40	21	23	14	22	25	34
27		8	17	01	22	26	12	23	26	30
28		9	19	34	23	29	18	24	27	32
29		10	22	04	24	—	—	25	28	28
30	K	11	24	18	24	08	15	26	29	09
May										
1	K	12	26	05	25	10	52	27	—	—
2		13	27	21	26	13	02	27	05	30
"			...			...		1	29	26
3		14	28	04	27	14	40	2	28	57
4	K	30	28	16	1	15	47	3	28	04
5	S	1	27	59	2	16	24	4	26	48
6		2	27	18	3	16	37	5	25	13
7		3	26	17	4	16	27	6	23	22
8		4	24	59	5	16	00	7	21	17
9		5	23	27	6	15	17	8	19	00
10		6	21	42	7	14	21	9	16	33
11		7	19	45	8	13	13	10	13	55
12		8	17	37	9	11	55	11	11	10
13		9	15	21	10	10	27	12	08	16
"			...			...		13	29	17
14		10	13	00	11	08	53	14	26	16
15	S	11	10	36	12	07	16	15	23	15

Date	Tithi				Nakshatra			Yoga		
May — *contd.*										
		T	*h*	*m*	*N*	*h*	*m*	*Y*	*h*	*m*
16	S	12	08	16	13	05	42	16	20	20
"			...		14	28	16		...	
17		13	06	05	15	27	07	17	17	37
"		14	28	11		...			...	
18	S	15	26	41	16	26	22	18	15	10
19	K	1	25	43	17	26	07	19	13	06
20		2	25	22	18	26	29	20	11	29
21		3	25	41	19	27	31	21	10	23
22		4	26	41	20	29	13	22	09	50
23		5	28	19	21	—	—	23	09	48
24		6	—	—	21	07	30	24	10	14
25		6	06	26	22	10	15	25	11	00
26		7	08	50	23	13	14	26	11	58
27		8	11	16	24	16	13	27	12	56
28		9	13	31	25	18	58	1	13	45
29		10	15	21	26	21	18	2	14	15
30		11	16	38	27	23	03	3	14	20
31	K	12	17	17	1	24	12	4	13	54
June										
1	K	13	17	17	2	24	42	5	12	59
2		14	16	40	3	24	39	6	11	34
3	K	30	15	32	4	24	05	7	09	43
4	S	1	13	58	5	23	08	8	07	29
"			...			...			9	28	58
5		2	12	04	6	21	54	10	26	14
6		3	09	55	7	20	28	11	23	21
7		4	07	38	8	18	56	12	20	24
"		5	29	17		...			...	
8		6	26	55	9	17	22	13	17	25
9		7	24	37	10	15	49	14	14	27
10		8	22	24	11	14	21	15	11	34
11		9	20	20	12	13	01	16	08	46
12		10	18	27	13	11	51	17	06	06
"			...			...		18	27	37
13		11	16	50	14	10	55	19	25	22
14		12	15	30	15	10	16	20	23	22
15		13	14	33	16	09	59	21	21	42
16		14	14	02	17	10	07	22	20	23
17	S	15	14	01	18	10	43	23	19	29
18	K	1	14	31	19	11	50	24	19	00
19		2	15	34	20	13	30	25	18	56
20		3	17	09	21	15	39	26	19	17
21		4	19	09	22	18	14	27	19	57
22		5	21	27	23	21	07	1	20	50
23		6	23	53	24	24	07	2	21	50
24		7	26	13	25	27	02	3	22	45
25		8	28	14	26	—	—	4	23	28
26		9	—	—	26	05	37	5	23	49
27		9	05	44	27	07	43	6	23	41
28		10	06	37	1	09	12	7	23	00
29		11	06	46	2	09	58	8	21	44
30	K	12	06	12	3	10	01	9	19	55
"		13	28	57		...			...	

Names of Tithis :— 1 Pratipat, 2 Dvitiya, 3 Tritiya, 4 Chaturthi, 5 Panchami, 6 Sasthi, 7 Saptami, 8 Astami, 9 Navami, 10 Dasami, 11 Ekadasi, 12 Dvadasi, 13 Trayodasi, 14 Caturdasi, 15 Paurnamasi *(Full-moon)* & 30 Amavasya *(New-moon)*. [Light-half *(Suklapaksa)* from S1 to S15 and dark-half *(Krisnapaksa)* from K1 to K14 & then K 30].

Date	Tithi				Nakshatra			Yoga		
July										
		T	*h*	*m*	*N*	*h*	*m*	*Y*	*h*	*m*
1	K	14	27	06	4	09	25	10	17	35
2	K	30	24	46	5	08	14	11	14	49
3	S	1	22	05	6	06	36	12	11	42
"			...		7	28	39		...	
4		2	19	10	8	26	30	13	08	20
"			...			...		14	28	50
5		3	16	09	9	24	18	15	25	19
6		4	13	10	10	22	10	16	21	51
7		5	10	19	11	20	14	17	18	32
8		6	07	42	12	18	34	18	15	26
"		7	29	25		...			...	
9		8	27	31	13	17	16	19	12	38
10		9	26	02	14	16	22	20	10	10
11		10	25	03	15	15	55	21	08	04
12		11	24	31	16	15	57	22	06	20
"			...			...		23	29	00
13		12	24	29	17	16	27	24	28	02
14		13	24	55	18	17	26	25	27	27
15		14	25	49	19	18	52	26	27	14
16	S	15	27	08	20	20	43	27	27	21
17	K	1	28	52	21	22	59	1	27	46
18		2	—	—	22	25	34	2	28	26
19		2	06	55	23	28	25	3	29	19
20		3	09	14	24	—	—	4	—	—
21		4	11	40	24	07	25	4	06	18
22		5	14	04	25	10	24	5	07	17
23		6	16	16	26	13	14	6	08	09
24		7	18	05	27	15	42	7	08	46
25		8	19	21	1	17	39	8	09	01
26		9	19	56	2	18	57	9	08	45
27		10	19	46	3	19	30	10	07	55
28		11	18	50	4	19	18	11	06	28
"			...			...		12	28	25
29		12	17	09	5	18	22	13	25	46
30		13	14	50	6	16	47	14	22	38
31	K	14	11	58	7	14	41	15	19	06
August										
1	K	30	08	42	8	12	12	16	15	16
"	S	1	29	12		...			...	
2		2	25	36	9	09	29	17	11	16
3		3	22	06	10	06	44	18	07	15
"			...		11	28	06	19	27	19
4		4	18	49	12	25	44	20	23	37
5		5	15	55	13	23	48	21	20	16
6		6	13	30	14	22	23	22	17	20
7		7	11	41	15	21	36	23	14	53
8		8	10	31	16	21	27	24	12	59
9		9	10	00	17	21	58	25	11	36
10		10	10	09	18	23	06	26	10	44
11		11	10	53	19	24	45	27	10	19
12		12	12	07	20	26	51	1	10	19
13		13	13	47	21	29	19	2	10	38
14		14	15	46	22	—	—	3	11	13
15	S	15	17	59	22	08	02	4	11	59

Date	Tithi				Nakshatra			Yoga		
August —*contd.*										
		T	*h*	*m*	*N*	*h*	*m*	*Y*	*h*	*m*
16	K	1	20	22	23	10	56	5	12	53
17		2	22	49	24	13	55	6	13	51
18		3	25	14	25	16	55	7	14	49
19		4	27	30	26	19	48	8	15	43
20		5	—	—	27	22	29	9	16	27
21		5	05	31	1	24	47	10	16	56
22		6	07	06	2	26	36	11	17	03
23		7	08	09	3	27	47	12	16	41
24		8	08	32	4	28	16	13	15	47
25		9	08	11	5	27	59	14	14	17
26		10	07	03	6	26	56	15	12	10
"		11	29	10		...			...	
27		12	26	36	7	25	13	16	09	26
28		13	23	29	8	22	55	17	06	10
"			...			...		18	26	27
29		14	19	56	9	20	11	19	22	23
30	K	30	16	07	10	17	11	20	18	08
31	S	1	12	14	11	14	07	21	13	49
September										
1	S	2	08	27	12	11	11	22	09	36
"		3	28	57		...			...	
2		4	25	54	13	08	33	23	05	38
"			...			...		24	26	03
3		5	23	28	14	06	24	25	22	59
"			...		15	28	53		...	
4		6	21	45	16	28	07	26	20	29
5		7	20	50	17	28	09	27	18	38
6		8	20	43	18	28	58	1	17	25
7		9	21	22	19	—	—	2	16	49
8		10	22	41	19	06	29	3	16	45
9		11	24	31	20	08	36	4	17	06
10		12	26	43	21	11	09	5	17	45
11		13	29	07	22	13	59	6	18	36
12		14	—	—	23	16	58	7	19	33
13		14	07	35	24	19	59	8	20	30
14	S	15	10	03	25	22	55	9	21	25
15	K	1	12	24	26	25	44	10	22	13
16		2	14	36	27	28	22	11	22	53
17		3	16	33	1	—	—	12	23	21
18		4	18	12	1	06	44	13	23	33
19		5	19	27	2	08	45	14	23	26
20		6	20	12	3	10	20	15	22	56
21		7	20	21	4	11	22	16	21	56
22		8	19	50	5	11	46	17	20	25
23		9	18	37	6	11	29	18	18	20
24		10	16	42	7	10	31	19	15	41
25		11	14	09	8	08	53	20	12	31
26		12	11	03	9	06	40	21	08	53
"			...		10	28	01	22	28	53
27		13	07	32	11	25	04	23	24	40
"		14	27	46		...			...	
28	K	30	23	56	12	22	02	24	20	22
29	S	1	20	14	13	19	07	25	16	09
30	S	2	16	50	14	16	29	26	12	08

Names of Nakshatras :— 1 Asvini, 2 Bharani, 3 Krittika, 4 Rohini, 5 Mrgasirsa, 6 Arda, 7 Punarvasu, 8 Pusya, 9 Aslesha, 10 Magha, 11 Purvaphalguni, 12 Uttaraphalguni, 13 Hasta, 14 Chitra, 15 Svati, 16 Visakha, 17 Anuradha, 18 Jyestha, 19 Mula, 20 Purvasadha, 21 Uttarasadha, 22 Sravana, 23 Dhanistha *(Sravistha)*, 24 Satabhisaj, 25 Purvabhadrapada, 26 Uttarbhadrapada & 27 Revati.

Tithi, Nakshatra & Yoga, 2019 Concld.

Date	Tithi				Nakshatra			Yoga		
October										
		T	*h*	*m*	*N*	*h*	*m*	*Y*	*h*	*m*
1	S	3	13	55	15	14	21	27	08	31
"			...			...		1	29	23
2		4	11	40	16	12	52	2	26	53
3		5	10	12	17	12	10	3	25	03
4		6	09	35	18	12	19	4	23	53
5		7	09	51	19	13	18	5	23	23
6		8	10	55	20	15	03	6	23	27
7		9	12	38	21	17	25	7	23	57
8		10	14	50	22	20	12	8	24	45
9		11	17	19	23	23	12	9	25	41
10		12	19	52	24	26	14	10	26	38
11		13	22	20	25	29	09	11	27	30
12		14	24	37	26	--	—	12	28	12
13	S	15	26	38	26	07	53	13	28	42
14	K	1	28	21	27	10	20	14	28	58
15		2	—	—	1	12	30	15	29	00
16		2	05	45	2	14	21	16	28	45
17		3	06	48	3	15	52	17	28	14
18		4	07	29	4	16	59	18	27	22
19		5	07	44	5	17	40	19	26	09
20		6	07	30	6	17	52	20	24	31
21		7	06	45	7	17	32	21	22	26
"		8	29	26		...			...	
22		9	27	33	8	16	39	22	19	55
23		10	25	09	9	15	13	23	16	57
24		11	22	19	10	13	18	24	13	36
25		12	19	08	11	11	00	25	09	56
26		13	15	47	12	08	27	26	06	03
"			...			...		27	26	05
27		14	12	23	13	05	49	1	22	10
"			...		14	27	17		...	
28	K	30	09	09	15	25	00	2	18	26
29	S	1	06	13	16	23	11	3	15	02
"		2	27	48		...			...	
30		3	26	02	17	21	59	4	12	05
31	S	4	25	02	18	21	31	5	09	42
November										
1	S	5	24	51	19	21	52	6	07	57
2		6	25	31	20	23	01	7	06	51
3		7	26	56	21	24	55	8	06	23
4		8	28	57	22	27	23	9	06	29
5		9	—	—	23	—	—	10	07	00
6		9	07	22	23	06	15	11	07	47
7		10	09	55	24	09	15	12	08	42
8		11	12	25	25	12	12	13	09	33
9		12	14	40	26	14	56	14	10	15
10		13	16	33	27	17	18	15	10	41
11		14	18	02	1	19	17	16	10	48
12	S	15	19	04	2	20	51	17	10	36
13	K	1	19	42	3	22	01	18	10	04
14		2	19	55	4	22	47	19	09	13
15	K	3	19	46	5	23	12	20	08	04

Date	Tithi				Nakshatra			Yoga		
November —*contd.*										
		T	*h*	*m*	*N*	*h*	*m*	*Y*	*h*	*m*
16	K	4	19	15	6	23	16	21	06	38
"			...			...		22	28	55
17		5	18	23	7	22	59	23	26	56
18		6	17	10	8	22	21	24	24	39
19		7	15	36	9	21	22	25	22	06
20		8	13	41	10	20	04	26	19	17
21		9	11	29	11	18	29	27	16	14
22		10	09	02	12	16	41	1	13	00
23		11	06	24	13	14	45	2	09	38
"		12	27	43		...			...	
24		13	25	06	14	12	47	3	06	14
"			...			...		4	26	54
25		14	22	41	15	10	57	5	23	44
26	K	30	20	36	16	09	23	6	20	51
27	S	1	18	59	17	08	12	7	18	21
28		2	17	59	18	07	34	8	16	18
29		3	17	40	19	07	34	9	14	49
30	S	4	18	05	20	08	16	10	13	53
December										
1	S	5	19	13	21	09	40	11	13	30
2		6	21	00	22	11	43	12	13	37
3		7	23	14	23	14	17	13	14	08
4		8	25	44	24	17	09	14	14	53
5		9	28	16	25	20	07	15	15	44
6		10	—	—	26	22	57	16	16	30
7		10	06	34	27	25	28	17	17	03
8		11	08	30	1	27	30	18	17	15
9		12	09	54	2	29	00	19	17	03
10		13	10	44	3	—	—	20	16	25
11		14	10	59	3	05	57	21	15	20
12	S	15	10	42	4	06	22	22	13	50
13	K	1	09	57	5	06	18	23	11	59
14		2	08	47	6	05	51	24	09	49
"			...		7	29	03		...	
15		3	07	18	8	28	01	25	07	24
"			...			...		26	28	47
16		4	05	35	9	26	47	27	26	01
"		5	27	40		...			...	
17		6	25	38	10	25	26	1	23	09
18		7	23	31	11	24	01	2	20	13
19		8	21	23	12	22	34	3	17	16
20		9	19	17	13	21	09	4	14	20
21		10	17	15	14	19	49	5	11	26
22		11	15	22	15	18	38	6	08	39
23		12	13	42	16	17	40	7	06	01
"			...			...		8	27	35
24		13	12	19	17	16	59	9	25	25
25		14	11	18	18	16	41	10	23	34
26	K	30	10	43	19	16	50	11	22	06
27	S	1	10	40	20	17	30	12	21	03
28		2	11	10	21	18	43	13	20	26
29		3	12	16	22	20	30	14	20	16
30		4	13	55	23	22	47	15	20	30
31	S	5	16	02	24	25	28	16	21	04
Jan. 1 (2020)	S	6	18	28	25	28	23	17	21	50

Names of Yogas :— 1 Viskumbha, 2 Priti, 3 Ayusman, 4 Saubhagya, 5 Sobhana, 6 Atiganda, 7 Sukarma, 8 Dhriti, 9 Sula, 10 Ganda, 11 Vriddhi, 12 Dhruva, 13 Vyaghata, 14 Harsana, 15 Vajra, 16 Siddhi (*Asrik*), 17 Vyatipata, 18 Variyan, 19 Parigha, 20 Siva, 21 Siddha, 22 Sadhya, 23 Shubha, 24 Sukla (*Sukra*), 25 Brahma, 26 Indra & 27 Vaidhriti.

KARANA—2019

In each *Tithi* there are two *Karanas* covering the two halves of the *tithimana*, the first *Karana* ends at the middle time of the *tithi* and the second *Karana* ends with the ending of that *tithi*. A *Karana* is completed when the nirayana longitude of the Moon gains every 6° (degrees) on that of the Sun. The ending times of each *Karana* are given below as are current at 5-30 a.m. I.S.T. in *hours* and *minutes*.

Date	Ending time of Karanas
Jan. 1	Bava *h* 13-23 then Balava *h* 25-29
2	Kaulava *h* 13-50 then Taitila *h* 26-11
3	Gara *h* 14-46 then Vanija *h* 27-21
4	Vishti *h* 16-09 then Sakuni *h*28-58
5	Chatuspada *h* 17-58
6	Naga *h* 6-58 then Kinthughna *h* 20-08
7	Bava *h* 9-19 then Balava *h* 22-37
8	Kaulava *h* 11-54 then Taitila *h* 25-16
9	Gara *h* 14-39 then Vanija *h* 28-00
10	Vishti *h* 17-22
11	Bava *h* 6-38 then Balava *h* 19-54
12	Kaulava *h* 9-00 then Taitila *h* 22-05
13	Gara *h* 10-54 then Vanija *h* 23-42
14	Vishti *h* 12-10 then Bava *h* 24-38
15	Balava *h* 12-41 then Kaulava *h* 24-45
16	Taitila *h* 12-24 then Gara *h* 24-04
17	Vanija *h* 11-19 then Vishti *h* 22-35
18	Bava *h* 9-28 then Balava *h* 20-22
19	Kaulava *h* 6-58 then Taitila *h* 17-35 then Gara *h* 27-57
20	Vanija *h* 14-19 then Vishti *h* 24-33
21	Bava *h* 10-46 then Balava *h* 20-56
22	Kaulava *h* 7-05 then Taitila *h* 17-16 then Gara *h* 27-26
23	Vanija *h* 13-43 then Vishti *h* 23-59
24	Bava *h* 10-27 then Balava *h* 20-58
25	Kaulava *h* 7-36 then Taitila *h* 18-18 then Gara *h* 29-19
26	Vanija *h* 16-20 then Vishti *h* 27-41
27	Bava *h* 15-02 then Balava *h* 26-46
28	Kaulava *h* 14-30 then Taitila *h* 26-35
29	Gara *h* 14-41 then Vanija *h* 27-12
30	Vishti *h* 15-34 then Bava *h* 28-18
31	Balava *h* 17-02
Feb. 1	Kaulava *h* 6-01 then Taitila *h* 19-00
2	Gara *h* 8-09 then Vanija *h* 21-19
3	Vishti *h* 10-36 then Sakuni *h* 23-53
4	Chatuspada *h* 13-13 then Naga *h* 26-34
5	Kintughna *h* 15-55 then Bava *h* 29-16
6	Balava *h* 18-36
7	Kaulava *h* 7-53 then Taitila *h* 21-05
8	Gara *h* 10-18 then Vanija *h* 23-22
9	Vishti *h* 12-26 then Bava *h* 25-18
10	Balava *h*14-09 then Kaulava *h* 26-45
11	Taitila *h*15-21 then Gara *h* 27-08
12	Vanija *h* 15-55 then Vishti *h* 27-51
13	Bava *h* 15-47 then Balava *h* 27-21
14	Kaulava *h* 14-55 then Taitila *h* 26-07
Feb. 15	Gara *h* 13-19 then Vanija *h* 24-10
16	Vishti *h* 11-02 then Bava *h* 21-36
17	Balava *h* 8-10 then Kaulava *h* 18-30 then Taitila *h* 28-51
18	Gara *h* 15-01 then Vanija *h* 25-12
19	Vishti *h* 11-18 then Bava *h* 21-24
20	Balava *h* 7-30 then Kaulava *h* 17-37 then Taitila *h* 27-39
21	Gara *h* 14-02 then Vanija *h* 24-26
22	Vishti *h* 10-50 then Bava *h* 21-31
23	Balava *h* 8-11 then Kaulava *h* 19-12
24	Taitila *h* 6-14 then Gara *h* 17-39 then Vanija *h* 29-05
25	Vishti *h* 16-56 then Bava *h* 28-47
26	Balava *h* 17-04 then Kaulava *h* 29-21
27	Taitila *h* 18-01
28	Gara *h* 6-41 then Vanija *h* 19-40
Mar.1	Vishti *h* 8-39 then Bava *h* 21-52
2	Balava *h* 11-05 then Kaulava *h* 24-25
3	Taitila *h* 13-45 then Gara *h* 27-07
4	Vanija *h* 16-29
5	Vishti *h* 5-48 then Sakuni *h* 19-07
6	Chatuspada *h* 8-21 then Naga *h* 21-34
7	Kintughna *h* 10-39 then Bava *h* 23-44
8	Balava *h* 12-39 then Kaulava *h* 25-35
9	Taitila *h* 14-19 then Gara *h* 27-03
10	Vanija *h* 15-35 then Vishti *h* 28-07
11	Bava *h* 16-36 then Balava *h* 28-44
12	Kaulava *h* 16-47 then Taitila *h* 28-50
13	Gara *h* 16-37 then Vanija *h* 28-23
14	Vishti *h* 15-53 then Bava *h* 27-22
15	Balava *h* 14-33 then Kaulava *h* 25-45
16	Taitila *h* 12-39 then Gara *h* 23-33
17	Vanija *h* 10-12 then Vishti *h* 20-51
18	Bava *h* 7-17 then Balava *h* 17-44 then Kaulava *h* 28-01
19	Taitila *h* 14-19 then Gara *h* 24-32
20	Vanija *h* 10-45 then Vishti *h* 20-59
21	Bava *h* 7-13 then Balava *h* 17-33 then Kaulava *h* 27-53
22	Taitila *h* 14-24 then Gara *h* 24-56
23	Vanija *h* 11-44 then Vishti *h* 22-33
24	Bava *h* 9-42 then Balava *h* 20-52
25	Kaulava *h* 8-26 then Taitila *h* 20-00
26	Gara *h* 8-01 then Vanija *h* 20-02
27	Vishti *h* 8-29 then Bava *h* 20-55
28	Balava *h* 9-45 then Kaulava *h* 22-34
29	Taitila *h* 11-41 then Gara *h* 24-48
30	Vanija *h* 14-06 then Vishti *h* 27-23
31	Bava *h* 16-44

KARANA, 2019 – *contd.*

Date	Ending time of Karanas
Apr. 1	Balava *h* 6-04 then Kaulava *h* 19-22
2	Taitila *h* 8-39 then Gara *h* 21-48
3	Vanija *h* 10-57 then Vishti *h* 23-54
4	Sakuni *h* 12-51 then Chatuspada *h* 25-36
5	Naga *h* 14-21 then Kintughna *h* 26-52
6	Bava *h* 15-24 then Balava 27-43
7	Kaulava *h* 16-02 then Taitila *h* 28-09
8	Gara *h* 16-16 then Vanija *h* 28-12
9	Vishti *h* 16-07 then Bava *h* 27-52
10	Balava *h* 15-36 then Kaulava *h* 27-09
11	Taitila *h* 14-42 then Gara *h* 26-03
12	Vanija *h* 13-24 then Vishti *h* 24-33
13	Bava *h* 11-42 then Balava *h* 22-39
14	Kaulava *h* 9-36 then Taitila *h* 20-22
15	Gara *h* 7-08 then Vanija *h* 17-46 then Vishti *h* 28-23
16	Bava *h* 14-55 then Balava *h* 25-26
17	Kaulava *h* 11-55 then Taitila *h* 22-24
18	Gara *h* 8-56 then Vanija *h* 19-27
19	Vishti *h* 6-05 then Bava *h* 16-42 then Balava *h* 27-32
20	Kaulava *h* 14-21 then Taitila *h* 25-27
21	Gara *h* 12-33 then Vanija *h* 23-59
22	Vishti *h* 11-25 then Bava *h* 23-15
23	Balava *h* 11-04 then Kaulava *h* 23-18
24	Taitila *h* 11-32 then Gara *h* 24-09
25	Vanija *h* 12-47 then Vishti *h* 25-44
26	Bava *h* 14-40 then Balava *h* 27-51
27	Kaulava *h* 17-01
28	Taitila *h* 6-18 then Gara *h* 19-34
29	Vanija *h* 8-49 then Vishti *h* 22-04
30	Bava *h* 11-11 then Balava *h* 24-18
May 1	Kaulava *h* 13-12 then Taitila *h* 26-05
2	Gara *h* 14-43 then Vanija *h* 27-21
3	Vishti *h* 15-43 then Sakuni *h* 28-04
4	Chatuspada *h* 16-10 then Naga *h* 28-16
5	Kintughna *h* 16-07 then Bava *h* 27-59
6	Balava *h* 15-39 then Kaulava *h* 27-18
7	Taitila *h* 14-46 then Gara *h* 26-17
8	Vanija *h* 13-38 then Vishti *h* 24-59
9	Bava *h* 12-13 then Balava *h* 23-27
10	Kaulava *h* 10-34 then Taitila *h* 21-42
11	Gara *h* 8-43 then Vanija *h* 19-45
12	Vishti *h* 6-41 then Bava *h* 17-37 then Balava *h* 28-29
13	Kaulava *h* 15-21 then Taitila *h* 26-10
14	Gara *h* 13-00 then Vanija *h* 23-49
15	Vishti *h* 10-36 then Bava *h* 21-25
16	Balava *h* 8-16 then Kaulava *h* 19-10
17	Taitila *h* 6-05 then Gara *h* 17-08 then Vanija *h* 28-11
18	Vishti *h* 15-26 then Bava h 26-41
19	Balava *h* 14-12 then Kaulava *h* 25-43
20	Taitila *h* 13-32 then Gara *h* 25-22
21	Vanija *h* 13-31 then Vishti *h* 25-41
22	Bava *h* 14-11 then Balava *h* 26-41
23	Kaulava *h* 15-30 then Taitila *h* 28-19
24	Gara *h* 17-22
25	Vanija *h* 6-26 then Vishti *h* 19-38
26	Bava *h* 8-50 then Balava *h* 22-03
27	Kaulava *h* 11-16 then Taitila *h* 24-24
28	Gara *h* 13-31 then Vanija *h* 26-26
29	Vishti *h* 15-21 then Bava *h* 28-00
30	Balava *h* 16-38 then Kaulava *h* 28-58
31	Taitila *h* 17-17 then Gara *h* 29-17
Jun. 1	Vanija *h* 17-17 then Vishti *h* 28-58
2	Sakuni *h*16-40 then Chatuspada *h* 28-06
3	Naga *h* 15-32 then Kintughna *h* 26-45
4	Bava *h* 13-58 then Balava *h* 25-00
5	Kaulava *h* 12-04 then Taitila *h* 22-59
6	Gara *h* 9-55 then Vanija *h* 20-47
7	Vishti *h* 7-38 then Bava *h* 18-27 then Balava *h* 29-17
8	Kaulava *h* 16-06 then Taitila *h* 26-55
9	Gara *h* 13-46 then Vanija *h* 24-37
10	Vishti *h* 11-30 then Bava *h* 22-24
11	Balava *h* 9-22 then Kaulava *h* 20-20
12	Taitila *h* 7-24 then Gara *h* 18-27
13	Vanija *h* 5-38 then Vishti *h* 16-15 then Bava *h* 28-10
14	Balava *h* 15-30 then Kaulava *h* 27-02
15	Taitila *h* 14-33 then Gara *h* 26-18
16	Vanija *h* 14-02 then Vishti *h* 26-01
17	Bava *h* 14-01 then Balava *h* 26-16
18	Kaulava *h* 14-31 then Taitila *h* 27-03
19	Gara *h* 15-34 then Vanija *h* 28-21
20	Vishti *h* 17-09
21	Bava *h* 6-09 then Balava *h* 19-09
22	Kaulava *h* 8-21 then Taitila *h* 21-27
23	Gara *h* 10-40 then Vanija *h* 23-53
24	Vishti *h* 13-03 then Bava *h* 26-13
25	Balava *h* 15-13 then Kaulava *h* 28-14
26	Taitila *h* 16-59
27	Gara *h* 5-44 then Vanija *h* 18-10
28	Vishti *h* 6-37 then Bava *h* 18-41
29	Balava *h* 6-46 then Kaulava *h* 18-29
30	Taitila *h* 6-12 then Gara *h* 17-34 then Vanija *h* 28-57

Date	Ending time of Karanas
Jul. 1	Vishti *h* 16-01 then Sakuni *h* 27-06
2	Chatuspada *h* 13-56 then Naga *h* 24-46
3	Kintughna *h* 11-26 then Bava *h* 22-05
4	Balava *h* 8-38 then Kaulava *h* 19-10
5	Taitila *h* 5-40 then Gara *h* 16-09 then Vanija *h* 26-40
6	Vishti *h* 13-10 then Bava *h* 23-45
7	Balava *h* 10-19 then Kaulava *h* 21-01
8	Taitila *h* 7-42 then Gara *h* 18-34 then Vanija *h* 29-25
9	Vishti *h* 16-28 then Bava *h* 27-31
10	Balava *h* 14-47 then Kaulava *h* 26-03
11	Taitila *h* 13-33 then Gara *h* 25-03
12	Vanija *h* 12-47 then Vishti *h* 24-31
13	Bava *h* 13-22 then Vanija *h* 24-29
14	Kaulava *h* 12-42 then Taitila *h* 24-55
15	Gara *h* 13-22 then Vanija *h* 25-49
16	Vishti *h* 14-25 then Bava *h* 27-08
17	Balava *h* 16-00 then Kaulava *h* 28-52
18	Taitila *h* 17-54
19	Gara *h* 6-55 then Vanija *h* 20-05
20	Vishti *h* 9-14 then Bava *h* 22-27
21	Balava *h* 11-40 then Kaulava *h* 24-52
22	Taitila *h* 14-04 then Gara *h* 27-10
23	Vanija *h* 16-16 then Vishti *h* 29-11
24	Bava *h* 18-05
25	Balava *h* 6-43 then Kaulava *h* 19-21
26	Taitila *h* 7-39 then Gara *h* 19-56
27	Vanija *h* 7-41 then Vishti *h* 19-46
28	Bava *h* 7-18 then Balava *h* 18-50
29	Kaulava *h* 5-59 then Taitila *h* 17-09 then Gara *h* 27-59
30	Vanija *h* 14-50 then Vishti *h* 25-24
31	Sakuni *h* 11-58 then Chatuspada *h* 22-20
Aug. 1	Naga *h* 8-42 then Kintughna *h* 18-57 then Bava *h* 29-12
2	Balava *h* 15-24 then Kaulava *h* 25-36
3	Taitila *h* 11-51 then Gara *h* 22-06
4	Vanija *h* 8-28 then Vishti *h* 18-49 then Bava *h* 29-22
5	Balava *h* 15-55 then Kaulava *h* 26-43
6	Taitila *h* 13-30 then Gara *h* 24-36
7	Vanija *h* 11-41 then Vishti *h* 23-06
8	Bava *h* 10-31 then Balava *h* 22-16
9	Kaulava *h* 10-00 then Taitila *h* 22-05
10	Gara *h* 10-09 then Vanija *h* 22-31
11	Vishti *h* 10-53 then Bava *h* 23-30
12	Vanija *h* 12-07 then Kaulava *h* 24-57
13	Taitila *h* 13-47 then Gara *h* 26-46
14	Vanija *h* 15-46 then Vishti *h* 28-52
15	Bava *h* 17-59
16	Balava *h* 7-11 then Kaulava *h* 20-22
Aug. 17	Taitila *h* 9-35 then Gara *h* 22-49
18	Vanija *h* 12-01 then Vishti *h* 25-14
19	Bava *h* 14-22 then Balava *h* 27-30
20	Kaulava *h* 16-30
21	Taitila *h* 5-31 then Gara *h* 18-19
22	Vanija *h* 7-06 then Vishti *h* 19-38
23	Bava *h* 8-09 then Balava *h* 20-21
24	Kaulava *h* 8-32 then Taitila *h* 20-22
25	Gara *h* 8-11 then Vanija *h* 19-37
26	Vishti *h* 7-03 then Bava *h* 18-06 then Balava *h* 29-10
27	Kaulava *h* 15-53 then Taitila *h* 26-36
28	Gara *h* 13-02 then Vanija *h* 23-29
29	Vishti *h* 9-42 then Sakuni *h* 19-56
30	Chatuspada *h* 6-01 then Naga *h* 16-07 then Kintughna *h* 26-10
31	Bava *h* 12-14 then Balava *h* 22-20
Sep. 1	Kaulava *h* 8-27 then Taitila *h* 18-42 then Gara *h* 28-57
2	Vanija *h* 15-25 then Vishti *h* 25-54
3	Bava *h* 12-41 then Balava *h* 23-28
4	Kaulava *h* 10-36 then Taitila *h* 21-45
5	Gara *h* 9-17 then Vanija *h* 20-50
6	Vishti *h* 8-47 then Bava *h* 20-43
7	Balava *h* 9-03 then Kaulava *h* 21-22
8	Taitila *h* 10-02 then Gara *h* 22-41
9	Vanija *h* 11-41 then Vishti *h* 24-31
10	Bava *h* 13-37 then Balava *h* 26-43
11	Kaulava *h* 14-55 then Taitila *h* 29-07
12	Gara *h* 18-21
13	Vanija *h* 7-35 then Vishti *h* 20-49
14	Bava *h* 10-03 then Balava *h* 23-13
15	Kaulava *h* 12-24 then Taitila *h* 25-30
16	Gara *h* 14-36 then Vanija *h* 27-34
17	Vishti *h* 16-34 then Bava *h* 29-22
18	Balava *h* 18-12
19	Kaulava *h* 6-49 then Taitila *h* 19-27
20	Gara *h* 7-49 then Vanija *h* 20-12
21	Vishti *h* 8-16 then Bava *h* 20-21
22	Balava *h* 8-06 then Kaulava *h* 19-50
23	Taitila *h* 7-14 then Gara *h* 18-37
24	Vanija *h* 5-40 then Vishti *h* 16-42 then Bava *h* 27-26
25	Balava *h* 14-09 then Kaulava *h* 24-36
26	Taitila *h* 11-03 then Gara *h* 21-17
27	Vanija *h* 7-32 then Vishti *h* 17-39 then Sakuni *h* 27-46
28	Chatuspada *h* 13-51 then Naga *h* 23-56
29	Kintughna *h* 10-05 then Bava *h* 20-14
30	Balava *h* 6-32 then Kaulava *h* 16-50 then Taitila *h* 27-22

Date	Ending time of Karanas
Oct. 1	Gara *h* 13-55 then Vanija *h* 26-48
2	Vishti *h* 11-40 then Bava *h* 22-56
3	Balava *h* 10-12 then Kaulava *h* 21-54
4	Taitila *h* 9-35 then Gara *h* 21-43
5	Vanija *h* 9-51 then Vishti *h* 22-23
6	Bava *h* 10-55 then Balava *h* 23-46
7	Kaulava *h* 12-38 then Taitila *h* 25-44
8	Gara *h* 14-50 then Vanija *h* 28-05
9	Vishti *h* 17-19
10	Bava *h* 6-35 then Balava *h* 19-52
11	Kaulava *h* 9-06 then Taitila *h* 22-20
12	Gara *h* 11-28 then Vanija *h* 24-37
13	Vishti *h* 13-37 then Bava *h* 26-38
14	Balava *h* 15-30 then Kaulava *h* 28-21
15	Taitila *h* 17-03
16	Gara *h* 5-45 then Vanija *h* 18-12
17	Vishti *h* 6-48 then Bava *h* 19-09
18	Balava *h* 7-29 then Kaulava *h* 19-36
19	Taitila *h* 7-44 then Gara *h* 19-37
20	Vanija *h* 7-30 then Vishti *h* 19-07
21	Bava *h* 6-45 then Balava *h* 18-05 then Kaulava *h* 29-26
22	Taitila *h* 16-29 then Gara *h* 27-33
23	Vanija *h* 14-21 then Vishti *h* 25-09
24	Bava *h* 11-44 then Balava *h* 22-19
25	Kaulava *h* 8-43 then Taitila *h* 19-08
26	Gara *h* 5-31 then Vanija *h* 15-47 then Vishti *h* 26-05
27	Sakuni *h* 12-23 then Chatuspada *h* 22-46
28	Naga *h* 9-09 then Kintughna *h* 19-46
29	Bava *h* 6-13 then Balava *h* 17-01 then Kaulava *h* 27-48
30	Taitila *h* 14-55 then Gara *h* 26-02
31	Vanija *h* 13-32 then Vishit *h* 25-02
Nov. 1	Bava *h* 12-56 then Balava *h* 24-51
2	Kaulava *h* 13-11 then Taitila *h* 25-31
3	Gara *h* 14-14 then Vanija *h* 26-56
4	Vishti *h* 15-47 then Bava *h* 28-57
5	Balava *h* 18-09
6	Kaulava *h* 7-22 then Taitila *h* 20-39
7	Gara *h* 9-55 then Vanija *h* 23-10
8	Vishti *h* 12-25 then Bava *h* 25-32
9	Balava *h* 14-40 then Kaulava *h* 27-36
10	Taitila *h* 16-33 then Gara *h* 29-18
11	Vanija *h* 18-02
12	Vishti *h* 6-33 then Bava *h* 19-04
13	Balava *h* 7-23 then Kaulava *h* 19-42
14	Taitila *h* 7-48 then Gara *h* 19-55
15	Vanija *h* 7-51 then Vishti *h* 19-46
Nov. 16	Bava *h* 7-31 then Balava *h* 19-15
17	Kaulava *h* 6-49 then Taitila *h* 18-23
18	Gara *h* 5-47 then Vanija *h* 17-10 then Vishti *h* 28-23
19	Bava *h* 15-36 then Balava *h* 26-38
20	Kaulava *h* 13-41 then Taitila *h* 24-35
21	Gara *h* 11-29 then Vanija *h* 22-15
22	Vishti *h* 9-02 then Bava *h* 19-43
23	Balava *h* 6-24 then Kaulava *h* 17-04 then Taitila *h* 27-43
24	Gara *h* 14-25 then Vanija *h* 25-06
25	Vishti *h* 11-53 then Sakuni *h* 22-41
26	Chatuspada *h* 9-38 then Naga *h* 20-36
27	Kintughna *h* 7-48 then Bava *h* 18-59
28	Balava *h* 6-29 then Kaulava *h* 17-59
29	Taitila *h* 5-49 then Gara *h* 17-40
30	Vanija *h* 5-52 then Vishti *h* 18-05
Dec. 1	Bava *h* 6-39 then Balava *h* 19-13
2	Kaulava *h* 8-07 then Taitila *h* 21-00
3	Gara *h* 10-07 then Vanija *h* 23-14
4	Vishit *h* 12-29 then Bava *h* 25-44
5	Balava *h* 15-00 then Kaulava *h* 28-16
6	Taitila *h* 17-25
7	Gara *h* 6-34 then Vanija *h* 19-32
8	Vishti *h* 8-30 then Bava *h* 21-12
9	Balava *h* 9-54 then Kaulava *h* 22-19
10	Taitila *h* 10-44 then Gara *h* 22-52
11	Vanija *h* 10-59 then Vishti *h* 22-51
12	Bava *h* 10-42 then Balava *h* 22-10
13	Kaulava *h* 9-57 then Taitila *h* 21-22
14	Gara *h* 8-47 then Vanija *h* 20-10
15	Vishti *h* 7-18 then Bava *h* 18-27
16	Balava *h* 5-35 then Kaulava *h* 16-37 then Taitila *h* 27-40
17	Gara *h* 14-03 then Vanija *h* 25-38
18	Vishti *h* 12-34 then Bava *h* 23-31
19	Balava *h* 10-27 then Kaulava *h* 21-23
20	Taitila *h* 8-20 then Gara *h* 19-17
21	Vanija *h* 6-16 then Vishit *h* 17-15 then Bava *h* 28-19
22	Balava *h* 15-22 then Kaulava *h* 26-32
23	Taitila *h* 13-42 then Gara *h* 25-00
24	Vanija *h* 12-19 then Vishti *h* 23-48
25	Sakuni *h* 11-18 then Chatuspada *h* 23-00
26	Naga *h* 10-43 then Kintughna *h* 22-41
27	Bava *h* 10-40 then Balava *h* 22-55
28	Kaulava *h* 11-10 then Taitila *h* 23-43
29	Gara *h* 12-16 then Vanija *h* 25-05
30	Vishti *h* 13-55 then Bava *h* 26-57
31	Balava *h* 16-02 then Kaulava *h* 29-15
Jan. 1 (2020)	Taitila *h* 18-28

Mean Places of STARS for 2019.0, *i.e.* on Jan. 0.319 U. T. = Jan. 0,14^{h}12^m I.S.T.

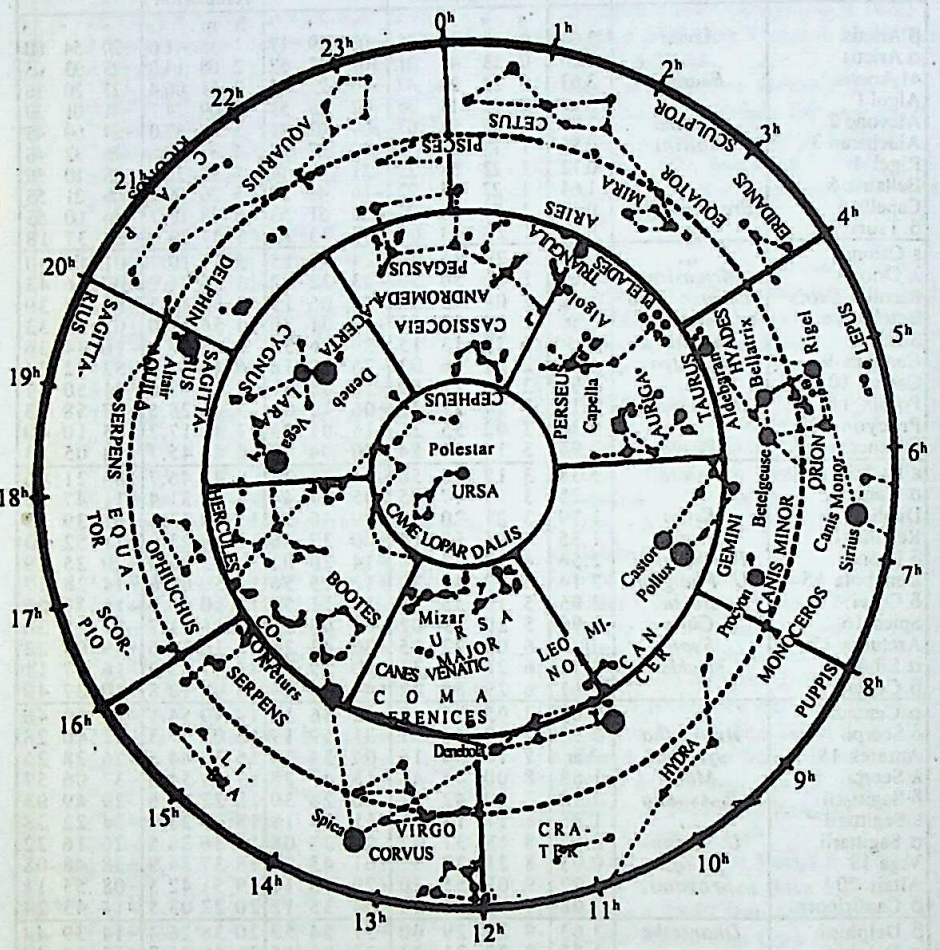
N. B. Tropical or Sayana Long. = Nirayana long. +24°07'21" (*Mean Ayanamsa* on Jan. 1)

STAR	Indian Name	Mag.	Nirayana Longitude				Latitude			Right Ascension			Declination		
			s	°	'	"	°	'	"	h	m	s	°	'	"
β Arietis	*Asvini*	2.64	0	10	06	46	+08	29	17	1	55	41.6	+20	54	00
α Arietis	...	2.00	0	13	48	21	+09	57	57	2	08	14.8	+23	33	05
41 Arietis	*Bharani*	3.63	0	24	20	47	+10	27	04	2	51	06.4	+27	20	16
Algol 1	...	Var	1	02	18	36	+22	25	51	3	09	24.7	+41	01	39
Alcyone 2	*Krittika*	2.87	1	06	08	07	+04	03	11	3	48	37.0	+24	09	45
Aldebaran 3	*Rohini*	0.85	1	15	55	57	−05	27	58	4	37	00.8	+16	32	46
Rigel 4	...	0.12	1	22	58	22	−31	07	14	5	15	27.1	−08	10	56
Bellatrix 5	...	1.64	1	27	05	22	−16	48	50	5	26	09.1	+06	21	55
Capella 6	*Brahmahriday*	0.08	1	28	00	04	+22	51	53	5	18	05.7	+46	00	55
β Tauri	*Agni*	1.65	1	28	43	04	+05	23	12	5	27	29.6	+28	37	18
ε Orionis	...	1.70	1	29	36	24	−24	30	15	5	37	10.7	−01	11	30
λ Orionis	*Mrigasiras*	3.66	1	29	50	59	−13	22	02	5	36	21.9	+09	56	43
Polaris α Ursae Minori's	*Dhruva Tara*	2.02	2	04	43	40	+66	06	13	2	55	37.5	+89	20	39
Betelguese 7	*Ardra*	Var	2	04	53	51	−16	01	29	5	56	12.0	+07	24	33
Sirius 8	*Lubdhaka*	−1.46	2	20	13	15	−39	36	34	6	45	59.1	−16	44	36
Canopus 9	*Agastya*	−0.72	2	21	06	03	−75	49	18	6	24	23.3	−52	42	24
Castor 10	...	1.95	2	26	22	59	+10	05	51	7	35	48.6	+31	50	51
Pollux 11	*Punarvasu*	1.14	2	29	21	20	+06	41	08	7	46	28.5	+27	58	53
Procyon 12	...	0.38	3	02	55	31	−16	01	24	7	40	17.7	+05	10	40
δ Cancri	*Pusya*	3.94	3	14	51	54	+00	04	40	8	45	45.7	+18	05	13
ε Hydrae	*Aslesa*	3.38	3	18	28	56	−11	06	24	8	47	46.7	+06	21	06
α Cancri	...	4.25	3	19	47	05	−05	04	44	8	59	31.4	+11	47	13
Dubhe 13	*Kratu*	1.79	3	21	20	32	+49	40	52	11	04	53.1	+61	39	42
Regulus 14	*Magha*	1.35	4	05	58	15	+00	27	56	10	09	23.8	+11	52	43
δ Leonis	*P. Phalguni*	2.56	4	17	27	40	+14	20	02	11	15	06.9	+20	25	29
Denebola 15	*U. Phalguni*	2.14	4	27	45	32	+12	15	56	11	50	01.6	+14	28	17
δ Corvi	*Hasta*	2.95	5	19	35	36	−12	11	54	12	30	50.9	−16	37	56
Spica 16	*Citra*	0.98	5	29	59	02	−02	03	21	13	26	11.7	−11	15	36
Arcturus 17	*Svati*	−0.04	6	00	22	35	+30	43	24	14	16	31.6	+19	05	22
α Librae	*Visakha*	2.75	6	21	13	31	+00	19	51	14	51	55.9	−16	07	11
β Centauri	...	0.61	6	29	55	02	+44	08	24	14	05	10.8	−60	27	49
α Centauri	...	0.00	7	05	35	43	−42	36	10	14	40	54.1	−60	54	46
δ Scorpii	*Anuradha*	2.32	7	08	42	51	−01	59	19	16	01	27.5	−22	40	28
Antares 18	*Jyestha*	Var	7	16	54	18	−04	34	21	16	30	34.5	−26	28	21
λ Scorpii	*Mala*	1.63	8	00	43	43	−13	47	28	17	34	54.0	−37	06	57
δ Sagittarii	*P. Asadha*	2.70	8	10	42	57	−06	28	30	18	22	12.6	−29	49	08
ε Sagittarii	...	1.85	8	11	13	17	−11	03	18	18	25	25.9	−34	22	28
σ Sagittarii	*U. Asadha*	2.02	8	18	31	42	−03	27	08	18	56	26.5	−26	16	22
Vega 19	*Abhijit*	0.03	8	21	27	37	+61	43	55	18	37	34.9	+38	48	08
Altair 20	*Sravana*	0.77	9	07	55	20	+29	18	11	19	51	42.5	+08	55	11
β Cap0ricorni	...	3.08	9	10	11	26	+04	35	12	20	22	03.5	−14	43	24
β Delphini	*Dhanistha*	3.63	9	22	29	00	+31	54	58	20	38	26.4	+14	39	44
α Delphini	...	3.77	9	23	31	22	+33	01	15	20	40	31.2	+15	58	47
Fomalhaut 21	...	1.16	10	10	00	19	−21	08	17	22	58	41.8	−29	31	35
Deneb 22	...	1.25	10	11	28	06	+59	54	20	20	42	04.8	+45	20	56
λ Aquarii	*Satabhisaj*	3.74	10	17	41	09	+00	23	14	22	53	36.2	−07	29	00
Achernar 23	...	0.46	10	21	27	32	−59	22	45	1	38	25.2	−57	08	45
Markab 24	*P. Bhadrapada*	2.49	10	29	37	40	+19	24	21	23	05	42.4	+15	18	28
β Pegasi	...	2.42v	11	05	31	01	+31	08	28	23	04	418	+28	11	10
γ Pegasi	...	2.83	11	15	08	04	+12	36	05	0	14	13.0	+15	17	21
α Andromedae	*U. Bhadrapada*	2.06	11	20	27	14	+25	40	55	0	09	22.4	+29	11	43
ζ Piscium	*Revati*	5.24	11	21	01	23	−00	12	52	1	14	43.5	+07	40	31

1. β Persei
2. η Tauri
3. α Tauri
4. β Orionis
5. γ Orionis
6. α Aurigae
7. α Orionis
8. α Canis Majoris
9. α Carinae
10. α Germinorum
11. β Germinorum
12. α Canis Minoris
13. α Ursae Majoris
14. α Leonis
15. β Leonis
16. α Virginis
17. α Bootis
18. α Scorpii
19. α Lyrae
20. α Aquilae.
21. α PiscisAustrini.
22. α Cygni.
23. α Eridani
24. α Pegasi.

The Northern Sky

(Extended up to 25° South of the Equator)



1 2 3 4

Star-Magnitudes

(The numerals around the edge of the circle indicate **Right Ascension**)

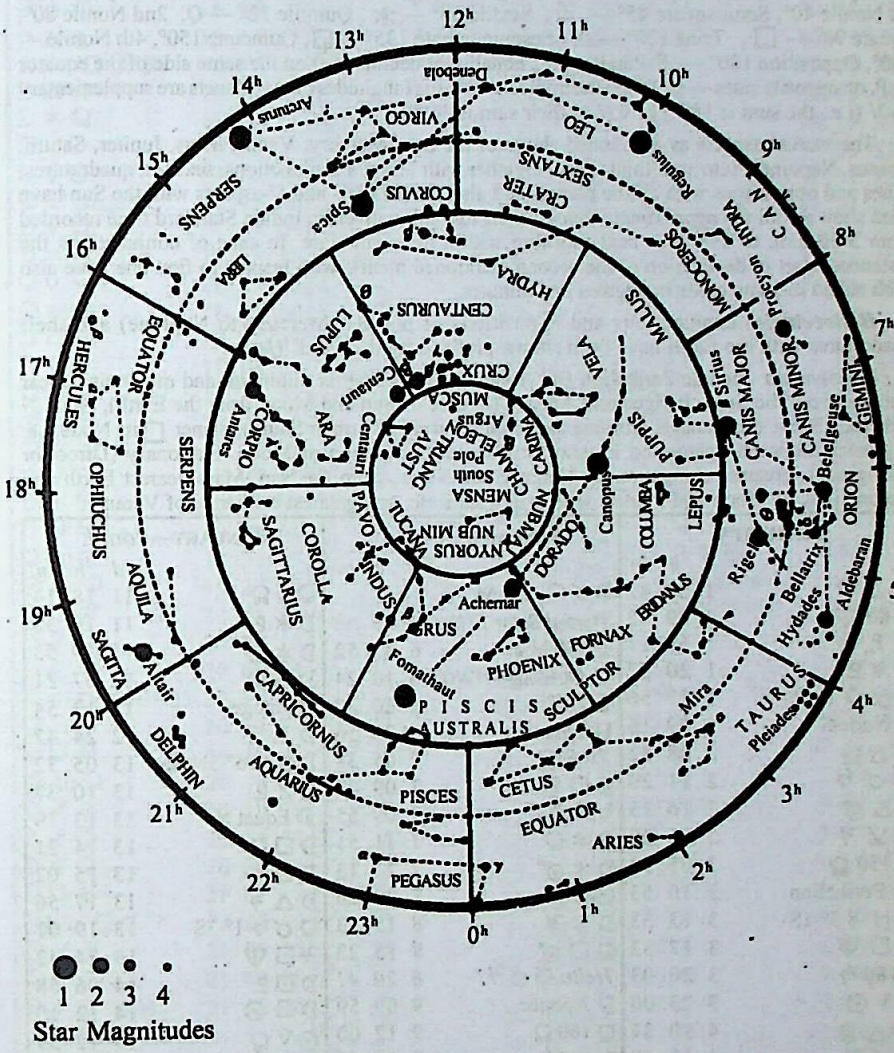
Dotted line indicate Equator

Bright Stars

Vega *(Abhijit)*, Capella *(Brahmahriday)*, Arcturus *(Svati)*, Procyon *(Sarama)*, Altair *(Sravana)*, Betelgeuse *(Ardra)*, Aldebaran *(Rohini)*, Pollux *(Punarvasu)*, Regulus *(Magha)*, Sirius *(Lubdhaka)*

The Southern Sky

(Extended up to 25° North of the Equator)



(The numerals around the edge of the circle indicate **Right Ascension**)

Dotted line indicate Equator

Bright Stars

Canopus *(Agastya)*, Alpha Centauri *(Kinnar)*, Beta Centauri, Rigel *(Vanaraja)*, Achernar *(Sulatara)*, Antares *(Jyestha)*, Fomulhaut, Spica *(Chitra)*, Alpha Crucis, Deneb *(Krishnasakha)*

Aspects & Phenomena, 2019 A.D.

Approximate time of the formation of Aspects and Phenomena in I.S.T.

Aspects :— Conjunction or on the same degree of longitude — ☌, Semi sextile or 30° apart — ⚺, 1st Nonile 40°, Semi-square 45° — ∠, Sextile 60° — ⚹, Quintile 72° — Q, 2nd Nonile 80°, Square 90° — □, Trine 120° — △, Sesquiquadrate 135° — ⚼, Quincunc 150°, 4th Nonile — 160°, Opposition 180° — ☍, Parallel (*i.e.*, equality of declination) on the same side of the equator — P, on opposite sides — p. When the tropical or sayana longitudes of two planets are supplementary — V (*i.e.*, the sum is 180°) or v (*i.e.*, their sum is 360°).

The mutual aspects as mentioned above of the Sun, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto and Rahu (True) together with Moon's conjunctions, sextiles, quadratures, trines and oppositions with all the planets and also the parallels and V-aspects with the Sun have been shown with the *approximate time* of their formation given in Indian Standard time recorded from 5-30 a.m. to 29*h* 29*m* next morning within the same date. In case of conjunctions the distances apart in declination of the second mentioned planet with respect to first one have also been stated in some cases in degrees and minutes.

Heliocentric conjunctions and oppositions of planets (Mercury to Neptune) and their quadratures with the Earth have been shown prefixed by the word *'Helio'*.

Phenomena include Perihelion and Aphelion (*viz.* planet at minimum and maximum linear distance from the Sun), Perigee and Apogee (in case of Sun and Moon from the Earth), Node N and Node S (*i.e.* the planet is crossing the ecliptic towards North or South), planet □ its Node, *i.e.* at greatest helio lat., planet on Equator, maximum declination of Moon, Stationary (Direct or Retrograde), greatest elongation of Mercury and Venus from the Sun, Mars nearest Earth and conjunctions of Moon and Planets with bright stars etc. and greatest brilliancy of Venus.

January	*d*	*h*	*m*
☽ △ ♆	1	08	42
☿ 80 ♆	1	09	22
☿ P ☉	1	18	11
☽ ✶ ♇	1	20	52
☽ ☌ ♀ 1°·3S	1	27	56
☿ Node S	1	29	16
☽ △ ♌	2	08	32
☉ ☌ ♑	2	11	20
☽ △ ♂	2	16	15
☉ ⚻ ♃	2	26	30
☿ 150 ♌	3	05	30
⊕ Perihelion	3	10	53
☽ ☌ ♃ 3°·1S	3	13	53
☽ □ ♆	3	17	33
♂ 80 ♑	3	20	03
☽ V ☉	3	23	00
☿ △ ♅	4	10	37
♀ ∠ ♑	4	12	18
♀ △ ♌	4	12	28
☽ △ ♅	4	21	42
☽ ☌ ☿ 2°·8S	4	23	12
☉ ✶ ♆	4	25	30
☽ □ ♂	5	05	36
♂ Q ♇	5	09	17
☽ ☌ ♑ 0°·9S	5	24	02
☽ ✶ ♆	5	28	32
☽ M.Dec.21°S33' ♋	6	06	44

JANUARY—*contd.*	*d*	*h*	*m*
☽ ☌ ☉ N.M.			
Partial Solar Eclipse	6	*06*	*58*
♀ 150 ♅	6	07	52
♀ Gt. Elong 47°W00'	6	10	24
☿ Q ♆	6	20	20
♅ Direct	6	25	56
☽ ☍ ♌	7	05	38
☽ □ ♅	7	09	27
♑ P ☉	7	09	55
☽ ✶ ♀	7	11	51
☽ ✶ ♂	7	21	13
☉ V ♃	8	09	26
☽ ✶ ♃	8	15	13
☿ □ ♂	8	15	23
Helio ☿ ☌ ♃	*8*	*20*	*41*
☽ Apogee	9	09	59
☿ 160 ♌	9	12	00
☽ ✶ ♅	9	22	22
♀ 40 ♑	9	24	47
♃ ⚼ ♅	9	27	30
☽ □ ♀	10	06	39
☽ ✶ ☿	10	17	45
☽ ✶ ♑	10	26	42
☽ ☌ ♆ 3°·1N	10	27	51
☽ □ ♃	10	29	18
♃ P ☉	11	11	29
☉ ☌ ♇	11	17	05

JANUARY—*contd.*	*d*	*h*	*m*
♀ v ♌	11	18	14
☽ ✶ ♇	11	19	38
☽ ✶ ☉	11	19	53
☽ △ ♌	12	07	21
☿ Apogee	12	13	54
☽ △ ♀	12	24	47
☽ ☌ ☍ 5°·3N ♋	13	05	32
♀ ∠ ♇	13	10	37
☽ Equat N	13	13	19
☽ □ ☿	13	14	31
☽ □ ♑	13	15	02
☽ △ ♃	13	17	56
☿ ☌ ♑ 1°·7S	13	19	01
♃ □ ♆	13	24	42
☽ □ ♇	14	06	58
☽ □ ☉	14	12	10
☉ V ♀	14	12	59
☽ □ ♌	14	17	52
☽ ☌ ♅ 5°·1N	14	17	59
☿ ✶ ♆	14	18	40
☿ ⚻ ♃	14	21	01
☉ 40 ♃	15	07	57
☍ Node N	15	10	19
☿ V ♃	15	22	42
☽ △ ♑	15	24	16
♀ 7°·9N Antares	15	26	07
☽ ✶ ♆	15	26	42

JANUARY—*contd.*	d	h	m
☽ △ ♅	16	06	59
☽ △ ♇	16	14	40
Helio ☿ ☌ ♆	*16*	*23*	*29*
☽ △ ☉	16	23	58
☽ ✶ ♌	16	24	47
☿ v ♇	16	25	29
☽ v ☉	17	11	57
☿ □ Node N	17	13	34
☽ ☍ ☿	17	25	20
☽ ✶ ♂	17	25	58
♅ v ☿	18	05	29
☿ 40 ♇	18	06	38
☽ □ ♆	18	07	25
☽ ☍ ♃	18	08	38
☿ ☐ ♌	18	19	54
♂ 80 ♇	18	20	39
☿ △ ♂	18	22	30
☽ p ☉	18	25	15
☽ ✶ ♄	19	07	01
☽ □ ♄	19	07	04
♅ 80 ♂	19	21	47
☉ ∠ ♆	19	27	52
☽ □ ♂ ♋	20	05	58
☽ ☍ ♑	20	07	18
☽ △ ♆	20	08	48
☽ M.Dec 21°N33'	20	10	20
☿ ⩛ ♑	20	12	57
☿ ☐ ♄	20	13	45
♅ 40 ☿	20	16	00
☽ ☍ ♇	20	19	29
☽ ☍ ♅	20	24	24
☽ ☌ ♌	20	28	19
☽ □ ♄	21	07	19
Helio ♅ ☌ ♑	*21*	*08*	*32*
☉ ∠ ♃	21	09	25
☿ □ ♆	21	09	38
☽ ☍ ☉ F.M.	21	10	45
Total Lunar Eclipse			
♂ □ ♑	21	17	30
♅40 ♃	21	23	38
☽ Perigee	21	25	30
Helio ⊕ □ ♄	*21*	*26*	*41*
☽ △ ♂	22	07	49
☽ △ ☿	22	10	14
☽ △ ♃	22	10	42
☿ ☍ ♌	22	12	21
♂ ⩛ ♆	22	13	58
☿ P ☉	22	16	23

JANUARY—*contd.*	d	h	m
☿ ☌ ♃ 2°·4N	22	17	56
☽ △ ♄	23	06	50
☿ v ♑	23	14	21
☉ Q ♂	23	14	39
♅ □ ♄	23	16	46
♅ P ♑	23	21	01
♅ ∠ ♆	24	06	29
♅ P ♃	24	06	41
☽ □ ♑	24	07	27
☽ ☍ ♆	24	08	27
☽ □ ♃	24	11	14
☽ □ ☿	24	14	02
☽ △ ♇	24	19	25
☽ ✶ ♌	24	28	10
☉ 40 ♆	25	05	30
♂ v ♆	25	09	57
♅ ∠ ♃	25	11	04
☽ △ ♅	25	12	20
☽ △ ☉	25	18	23
♂ △ ♃	25	23	06
♃ V ♑	26	05	29
☽ Equat S	26	05	42
☽ □ ♑	26	09	43
♂ p ♆	26	13	57
☽ ✶ ♃	26	13	58
☽ ☍ ♂	26	14	32
☽ ✶ ☿	26	20	38
☽ □ ♇	26	22	05
☽ □ ♌ ♋	27	07	54
♅ 40 ♆	27	07	56
☽ ☍ ♅	27	10	55
☿ ⩛ ♇	27	15	06
☽ □ ♅	27	23	35
☽ □ ☉	27	26	42
♅ Q ♂	27	27	06
☽ ✶ ♑	28	15	21
☽ △ ♆	28	15	49
♃ P ♑	28	17	29
♅ P ☿	28	17	51
☽ v ☉	28	27	45
☽ ✶ ♇	28	28	09
☉ 80 ♅	29	06	42
☽ △ ♌	29	13	56
♅ ∠ ☿	29	17	09
♅ 80 ♅	29	17	09
Helio ⊕ □ ♅	*30*	*07*	*23*
☉ ☌ ♅ Sup.	30	08	20

JANUARY—*concld.*	d	h	m
☽ P ☉	30	12	13
☿ 80 ♆	30	15	28
☽ ✶ ☉	30	15	38
☽ ✶ ♅	30	16	06
☽ □ ♆	30	24	39
☽ ☌ ♃ 2°·8S	31	05	53
☽ △ ♂	31	11	22
☽ ☌ ☿ 0°·1S	31	23	05
Occultation			
Helio ♅ ☌ ♆	*31*	*26*	*29*
☽ △ ♅	31	28	03
February			
☿ 150 ♌	1	08	22
♅ □ Node S	1	20	00
♅ ⩛ ♆	2	06	12
♅ ⩛ ♑	2	07	55
♂ □ ♇	2	08	39
☽ ✶ ♆	2	12	12
☉ ∠ ☿	2	12	21
☽ ☌ ♑ 0°·6S	2	12	27
Occultation			
☽ M.Dec 21°S33'	2	12	46
☽ □ ♂	2	26	43
☿ △ ♅	2	29	09
♅ 160 ♌ ♋	3	07	45
♅ Q ♅	3	09	09
☽ ☍ ♌	3	12	07
☽ □ ♅	3	16	24
☉ ⩛ ♆	4	09	34
♅ ✶ ♃	4	13	51
☉ ⩛ ♑	4	16	37
☽ ☌ ☉ N.M.	4	26	34
☽ ✶ ♃	5	08	05
♅ ✶ ♂	5	09	25
♂ △ ♃	5	09	42
☉ ✶ ♂	5	11	37
♂ ⩛ ♆	5	12	29
☽ ☌ ♅ 0°·2N	5	12	41
☽ Apogee	5	14	59
☽ P ☉	5	17	43
♂ Q ♇	5	21	44
☿ □ ♂	5	23	08
♂ ⩛ ♅	5	25	39
☉ 160 ♌	5	26	27
♂ Q ♑	5	26	53
♂ △ ♌	5	27	29

FEBRUARY—*contd.*			
	d	h	m
☿ ☌ ♇	5	28	14
☽ ✶ ♅	5	29	28
☉ Q ♅	6	07	56
☽ ✶ ♌	6	13	02
☿ P ☉	6	21	29
♌ Q ♆	6	21	30
☽ ☌ ♆ 3°.1N	7	11	45
♌ □ ♂	7	12	27
☽ ✶ ♂	7	13	44
☽ ✶ ♄	7	15	13
☽ □ ♃	7	21	46
☽ ✶ ♂	7	24	04
☽ ✶ ♇	7	27	43
☿ ✶ ♂	7	29	27
☉ ✶ ♃	8	05	58
☿ 40 ♄	8	07	23
☽ △ ♋	8	13	15
☿ 150 ♋	8	19	13
☽ □ ♌	9	07	50
♂ □ ♋	9	13	41
♂ P ♅	9	17	29
☽ Equat N	9	19	37
♌ 160 ♋	9	20	37
☽ □ ♄	9	27	34
☿ ✶ ♅	9	28	23
☽ △ ♃ ♑	10	10	10
☽ ✶ ☉	10	14	06
☽ □ ♇	10	15	18
☽ □ ♋	10	24	07
☽ ☌ ♅ 5°.1N	10	25	50
☽ ☌ ♂ 6°.1N	10	26	18
☉ ☍ ♇	10	29	06
☿ ∠ ♄	11	05	58
☽ ✶ ☿	11	09	26
☿ Q ♃	11	11	34
☿ v ♅	11	17	50
☿ 40 ♇	11	18	17
☽ v ☉	11	21	01
☽ △ ♌	11	24	05
☿ v ♂	11	28	02
☽ ✶ ♆	12	11	57
☽ △ ♄	12	13	31
☿ p ♂	12	17	29
☽ △ ♇	12	24	21
☽ p ☉	12	24	46
☽ □ ☉	12	27	55

FEBRUARY—*contd.*			
	d	h	m
☽ ✶ ♋	13	08	29
☿ p.♅	13	18	07
♌ v ♃	13	20	59
♂ v ♄	13	21	01
☿ ☌ ♅ 1°.1N	13	25	40
☽ □ ☿	13	26	03
Helio ☿ ☍ ♅	*14*	*09*	*29*
☿ ∠ ♇	14	13	57
☽ □ ♆	14	18	20
☽ ☍ ♃	14	26	24
♂ ∠ ♆	15	07	21
☽ △ ☉	15	13	14
☉ 150 ♋	15	16	29
☉ 40 ♄	15	16	51
☽ ✶ ♅	15	18	13
☽ ✶ ♂	15	20	48
☿ 80 ♃	16	08	30
☽ △ ☿	16	13	04
♂ p ☉	16	13	43
☽ ☍ ♌	16	19	48
☽ △ ♆	16	21	15
☽ M. Dec. 21°N35'	16	21	57
☽ ☍ ♄	16	23	05
☿ □ ♋	16	26	30
☽ ☍ ♇ ♑	17	08	08
☉ v ♂	17	14	16
♌ ✶ ♆	17	14	19
☽ ☌ ♋	17	15	12
☽ □ ♅	17	19	44
☽ □ ♂	17	24	25
Helio ☿ ☌ ♅	*17*	*24*	*56*
☉ ✶ ♅	18	13	22
♌ ☌ ♄ 1°.1N	18	16	22
☿ P ♆	18	17	29
☿ ∠ ♅	18	18	50
☽ △ ♃	19	05	30
Helio ☿ ☍ ♌	*19*	*10*	*25*
☽ Perigee	19	14	33
☿ ☌ ♆ 0°.8N	19	16	35
☽ △ ♅	19	19	21
☽ ☍ ☉ F.M.	19	21	24
☽ △ ♂	19	26	01
☿ ✶ ♄	20	08	12
☉ v ♅	20	17	29
☽ ☍ ♆	20	20	54
☿ Node N	20	21	30
☽ △ ♄	20	23	04

FEBRUARY—*contd.*			
	d	h	m
☽ ☍ ☿	20	24	42
☽ △ ♌	20	27	15
♅ p ☉	20	28	13
☉ ∠ ♄	20	28	37
☽ □ ♃	20	29	11
☽ △ ♇	21	07	23
☉ 40 ♇	21	09	38
☽ ✶ ♋	21	13	53
☿ 40 ♅	21	23	34
☉ Q ♃	21	27	39
♌ ☍ ♃	22	07	03
☿ ∠ ☿	22	12	48
☽ Equat S	22	14	52
☽ □ ♄	22	23	54
☿ □ ♃	22	26	09
☽ ✶ ♃	23	06	27
☽ □ ♌	23	08	19
☽ □ ♇	23	08	24
☽ v ☉	23	14	00
☽ □ ♋	23	14	53
Helio ⊕ □ ☿	*23*	*15*	*49*
☿ 80 ♋	23	17	14
Helio ☿ ☍ ♃	*23*	*17*	*29*
☽ ☍ ♅	23	20	46
☿ □ ♃	23	21	30
☿ ✶ ♇	23	22	54
☽ △ ☉ ♑	24	06	14
☽ ☍ ☿	24	08	45
☽ P ☉	24	12	36
Helio ☿ ☌ ☿	*24*	*14*	*09*
Helio ☿ ☍ ♃	*24*	*14*	*09*
☽ △ ♆	24	25	03
☽ ✶ ♄	24	27	52
☽ ✶ ♇	25	12	53
☿ Perigee	25	13	31
☽ △ ☿	25	16	49
☽ ✶ ♌	25	17	50
☽ △ ♋	25	19	32
☉ ∠ ♇	26	12	07
♌ ☍ ♋	26	12	36
☽ □ ☉	26	17	04
☿ △ ♋	26	24	56
☿ Gt.Elong 18°E01'	27	06	55
☽ □ ♆	27	08	47
☽ ☌ ♃ 2°.3S	27	20	04
☽ □ ☿	28	06	40
☉ ✶ ♂	28	07	54
☽ △ ♅	28	11	50

MARCH

	d	h	m
☽ △ ♂ ℞	1	07	57
☽ ✶ ☉	1	08	41
Helio ☿ ☌ ♄	*1*	*11*	*10*
☽ M.Dec.21°S38'	1	17	19
♀ □ ♅	1	18	01
☽ ✶ ♆	1	20	11
☽ ☍ ♄ 0°·3S	1	23	53
Occultation			
☉ ☐ ♌	1	27	52
Helio ♁ □ ♃	*2*	*14*	*55*
☽ ☌ ♌	2	16	33
♀ ∠ ♆	2	18	22
☽ ✶ ☿	2	22	24
☽ □ ♅	2	24	18
☽ ☍ ♀ 1°·2N	2	27	33
☉ 80 ♃	2	29	03
☉ v ☿ ♑	3	15	44
♀ 40 ♃	3	17	53
☽ □ ♂	3	24	23
☽ Apogee	4	16	56
♆ P ☉	4	21	51
☽ ✶ ♃	4	22	00
☽ ✶ ♅	5	13	34
☿ Retrograde	5	23	53
☉ ∠ ♅	5	26	08
☉ 40 ♀	6	07	41
☽ ✶ ♂	6	16	54
☽ ☍ ♆ 3°·2N	6	19	49
☽ ☍ ☉ N.M.	6	21	34
♂ ☐ ♌	6	25	06
☽ ✶ ♄	6	26	28
♀ 40 ♆	6	26	43
☉ ☍ ♆	7	06	30
☽ □ ♃	7	11	06
☽ ✶ ♇	7	11	10
☽ △ ♌	7	17	10
☿ □ Node N	7	18	43
♃ ∠ ♇	7	19	54
☿ ∠ ♂	7	23	30
☽ ☍ ☿ 8°·4N	7	24	38
♀ ∠ ♃	8	08	46
☽ ✶ ♀	8	17	57
Helio ♁ □ ♂	*8*	*20*	*41*
☽ Equat N	8	24	40
☽ v ☉	8	25	43
☉ ✶ ♄	9	12	47
☽ □ ♄	9	14	11

MARCH—*contd.*

	d	h	m
☽ □ ♌	9	16	21
☽ □ ♇	9	22	23
☽ △ ♃	9	22	42
☽ ☌ ☉	9	24	10
☽ □ ♌	9	27	23
☽ ☍ ♅ 4°·9N ♑	10	09	41
♀ 80 ♅	10	15	42
♀ ☌ ♂	10	17	04
♂ ✶ ♆	10	21	55
☉ 40 ♅	11	07	36
☽ □ ♀	11	10	13
Helio ♀ ☍ ♃	*11*	*16*	*57*
☽ ✶ ♆	11	19	45
☽ ☍ ♂ 5°·8N	11	20	57
☽ △ ♄	11	24	02
☿ ∠ ♀	11	25	36
☽ ✶ ☉	11	28	43
☽ △ ♇	12	07	42
☽ ✶ ♌	12	11	50
☽ ✶ ☿	12	14	57
♀ v ♂	12	21	11
Helio ☿ ☌ ♆	*13*	*10*	*51*
☉ ✶ ♇	13	19	59
☽ △ ♀	13	23	25
☽ □ ♆	13	27	12
☉ □ ♃	14	06	59
♀ 160 ♌	14	09	54
☿ △ ♌	14	14	21
♀ Node S	14	15	09
☽ ☌ ♃	14	15	16
♂ △ ♄	14	15	30
☿ 40 ♀	14	15	53
☽ □ ☉	14	15	57
☽ □ ☿	14	17	56
☽ ✶ ♅	14	27	59
☉ ☌ ♀ Inf.	15	07	17
♀ ∠ ♆	15	18	43
☉ △ ♌	15	23	30
☿ □ ♃	15	28	44
☽ M. Dec.21°N46'	15	29	03
☽ △ ♆	16	07	46
☽ ☌ ♄	16	11	50
☽ ✶ ♂	16	13	48
☽ ☌ ♇	16	18	19
☽ △ ☿	16	18	20
☿ ✶ ♇	16	18	44
☽ ☌ ♌	16	21	53
☽ △ ☉	16	23	30

MARCH—*contd.*

	d	h	m
☽ □ ♅ ♑	17	07	15
♀ Q ♅	17	11	25
♀ ∠ ♄	17	21	44
Helio ♀ ☌ ♂	*17*	*28*	*44*
☿ ✶ ♂	18	08	51
☽ ☌ ♀	18	14	54
☽ □ ♂	18	17	33
☿ p ☉	18	20	45
☽ △ ♃	18	20	47
☿ 40 ♅	18	27	24
☿ ∠ ♀	18	28	21
☽ △ ♅	19	08	08
☽ Perigee	19	25	18
☽ ☌ ♆	20	09	44
☽ △ ♄	20	13	45
♂ △ ♇	20	17	12
☽ △ ♇	20	19	34
☽ △ ♂	20	19	42
☿ ✶ ♄	20	20	23
☽ □ ♃	20	20	52
☽ ✶ ♌	20	22	18
♀ ∠ ♇	20	26	27
☉ Enters ♈			
Vernal Equinox	20	27	28
☽ V ☉	21	06	46
☽ ☌ ☉ F.M.	21	07	13
♀ □ ♂	21	13	45
♀ ✶ ♃	21	19	46
☉ ∠ ♅	21	21	21
☽ Equat S	21	25	25
♂ 150 ♃	21	25	30
♀ 150 ♌	22	07	50
☉ Q ♄	22	11	04
☿ ☍ ♆ 3°·4N	22	11	59
☽ □ ♌	22	13	58
☽ □ ♄	22	14	12
♂ ✶ ♌	22	19	25
☽ □ ♇	22	20	04
☽ ✶ ♃	22	21	32
☽ □ ♌	22	22	15
☽ △ ♀	22	23	43
☽ ☌ ♅	23	09	10
☽ △ ♆ ♑	24	12	25
☽ △ ☿	24	12	46
☽ ✶ ♄	24	17	01
☽ ✶ ♇	24	23	05
☽ △ ♌	24	24	50
♃ 150 ♌	24	25	08
☽ ☌ ♂	24	28	09

March—*concld.*

	d	h	m
☽ □ ♀	25	07	57
Helio ☿ ☌ ♅	*25*	*19*	*18*
☽ △ ☉	25	20	07
Helio ⊕ □ ♀	*25*	*24*	*21*
♀ 40 ♑	26	16	17
☽ □ ☿	26	17	38
☽ □ ♆	26	18	43
♀ v ♅	26	25	00
☉ Q ♇	26	26	39
☽ ☌ ♐ 1°·9S	27	08	07
☽ ✶ ♀	27	21	41
☽ △ ♅	27	21	44
♀ ✶ ♅	27	22	12
☽ □ ☉	28	09	40
☿ Q ♂	28	15	06
☿ Direct	28	19	33
♀ p ♅	28	21	29
☽ M.Dec. 21°S52'	28	24	56
☽ ✶ ☿	28	27	19
☽ ✶ ♆	28	29	04
☿ ∠ ♅	29	10	18
☽ ☌ ♑ 0°·1N			
Occultation			
♀ 40 ♇	29	12	36
☽ ☍ ♌	29	18	39
♂ Q ♆	29	23	49
☽ △ ♂	30	05	34
☽ □ ♅	30	09	36
☉ 80 ♑	30	24	21
♀ ∠ ♑	30	24	38
☿ Node S	30	28	25
Helio ♀ ☌ ♑ ♋	*31*	*21*	*29*
♀ Q ♃	31	28	49

April

	d	h	m
☽ Apogee	1	06	44
☽ ✶ ♃	1	08	31
☽ □ ♂	1	22	13
☽ ✶ ♅	1	22	58
☽ ☌ ♀ 2°·7N	2	12	02
♂ ∨ ♅	2	12	50
♀ ∠ ♇	2	17	10
☿ ☍ ♆ 0°·4N	2	24	11
♀ ☐ ☍	2	25	39
☽ ☌ ♆ 3°·3N	2	28	21
☽ ☌ ☿ 3°·6N	2	28	32

April—*contd.*

	d	h	m
☽ v ☉	3	06	36
☽ ☌ ☿	3	07	28
☉ 80 ♇	3	07	32
☽ ✶ ♑	3	12	25
☽ ✶ ♇	3	18	37
☽ △ ☍	3	19	09
☽ □ ♃	3	21	03
♂ p ♑	3	26	29
☽ p ☉	3	26	46
☉ v ♆	3	27	03
☿ p ☉	4	09	16
☽ ✶ ♂	4	13	44
Helio ⊕ □ ♑	*4*	*14*	*20*
♇ ☌ ☍	4	24	21
☽ Equat N	5	06	48
♆ p ☉	5	08	29
☽ ☌ ☉ N.M.	5	14	20
☽ □ ♑	5	23	29
☽ □ ☍	5	28	48
☽ □ ♇	5	29	20
☽ △ ♃	6	07	44
☽ P ☉	6	16	43
☽ ☌ ♅ 4°·8N	6	18	29
♂ 160 ♃	6	26	01
☉ v ♀ ♋	7	14	11
☿ ✶ ♑	7	14	26
☉ ∨ ♆	7	15	36
☽ ✶ ♀	7	21	31
♀ 80 ♃	7	22	44
☽ ✶ ♆	7	27	14
☽ △ ♑	8	08	28
♀ p ☉	8	08	29
☽ ✶ ☿	8	09	33
☽ ✶ ☍	8	12	31
☽ △ ♇	8	13	56
♀ 80 ♂	8	24	25
Helio ☿ ☌ ♃	*9*	*10*	*17*
☽ ☌ ♂ 4°·7N	9	13	46
☿ 40 ♅	9	15	18
♀ ∠ ♅	9	23	14
☿ △ ☍	9	25	47
♀ ☌ ♆ 0°·3S	10	09	17
☽ □ ♀	10	10	18
☽ □ ♆	10	10	26
☿ Apogee	10	13	10
☉ □ ♑	10	14	21

April—*contd.*

	d	h	m
☽ ✶ ☉	10	15	33
☽ □ ☿	10	20	11
♃ Retrograde	10	22	31
☽ ☌ ♃	10	22	55
♀ P ♆	10	25	56
☿ ✶ ♇	10	27	19
♂ ∠ ☍	10	28	23
☽ ✶ ♅	11	12	17
♂ 80 ♆	11	18	28
☿ Gt. Elong 27°W07'	11	25	12
☿ □ ♃	12	09	45
☽ M.Dec.24°N01'	12	11	02
☉ □ ☍	12	11	18
☽ △ ♆	12	15	41
♂ ☐ ♇	12	18	42
☽ △ ♀	12	20	32
☽ ☌ ♑	12	20	33
♀ ✶ ♑	12	20	43
♂ v ♇	12	22	48
☽ ☌ ☍	12	23	39
☽ □ ☉	12	24	33
☽ ☌ ♇	12	25	29
☽ △ ☿	12	29	02
♂ p ♃	12	29	29
☉ □ ♇	13	13	38
☽ □ ♅	13	16	40
♂ V ☍	13	25	11
☽ ✶ ♂	13	28	42
♀ 40 ♅ ♋	14	07	14
♀ △ ☍	14	07	44
☽ △ ☉	14	13	24
♅ 80 ☍	14	13	30
♀ ✶ ♇	14	29	10
☽ △ ♃	15	06	19
☉ Q ♂	15	07	51
☉ ∨ ♅	15	11	11
☉ Q ♑	15	11	23
☉ Q ♇	15	13	33
☽ △ ♅	15	19	10
☿ Q ♂	15	23	06
☽ V ☉	15	23	11
☉ ∨ ♆	15	23	12
☉ □ ☍	15	26	34
☉ ∨ ♀	15	28	23
☉ △ ♃	15	28	24
♀ □ ♃	15	28	51
☽ □ ♂	16	08	57

APRIL—*Contd.*

	d	h	m
☌ v ♄	16	14	29
☽ P ☉	16	14	54
☽ ☍ ♆	16	20	39
☽ △ ♄	16	25	10
♂ 6°·5N *Aldebaran*	16	27	16
☽ ✶ ☊	16	27	31
☽ Perigee	16	27	35
☽ △ ♇	17	05	40
☽ □ ♃	17	07	32
☽ ☍ ☌	17	09	59
☽ ☍ ☿	17	17	22
Helio ☿ ☍ ♂	*17*	*17*	*29*
♂ 40 ☊	17	28	02
☉ 40 ♆	17	28	39
☽ Equat S	18	11	39
☽ △ ♂	18	12	17
☽ □ ♄	18	26	19
♂ 40 ♅	18	27	30
☽ □ ☊	18	28	02
☽ □ ♇	19	06	48
☿ ⚺ ♅	19	07	44
☽ ✶ ♃	19	08	38
☿ Q ♄	19	09	52
☿ v ☌	19	13	29
☽ ☍ ☉ F.M.	19	16	45
☽ ☍ ♅	19	22	08
Helio ☿ ☌ ♄	*20*	*05*	*54*
☉ 80 ☊	20	15	32
☽ p ☉	20	17	43
☽ △ ♆	20	24	12
☽ ✶ ♄	20	28	51
☽ △ ☊ ♋	21	05	56
☽ □ ♇	21	09	32
☿ Q ♇	21	11	21
♅ P ☉	21	18	07
☽ △ ☌	21	23	53
☉ ⚺ ☌	21	27	47
☽ △ ☿	22	08	52
☌ Q ♄	22	22	50
☌ ⚺ ♅	22	23	35
☿ p ☌	22	24	46
☉ ☌ ♅	22	28	36
☽ □ ♆	23	05	34
☉ ∠ ♆	23	11	30
☌ Q ♂	23	11	51
☽ ☌ ♃ 1°·6S	23	17	14
☌ Q ♇	23	27	50

APRIL—*concld.*

	d	h	m
☽ △ ♅	24	09	18
☽ △ ☉	24	11	36
☽ □ ☌	24	12	47
☽ □ ☿	24	23	48
♇ Retrograde	24	24	17
☿ 80 ♄	25	06	46
☽ M.Dec.22°S08'	25	08	18
☽ ✶ ♆	25	14	55
☽ ☌ ♄ 0°·4N	25	20	04
Occultation			
☽ ☍ ☊	25	20	34
☽ □ ♅	26	20	29
☿ 80 ♇	26	24	01
☿ v ♆	26	25	34
☽ □ ☉	26	27	59
☽ ✶ ☌	27	06	29
Helio ⊕ □ ☿	*27*	*06*	*51*
♂ ∠ ♅	27	12	50
♂ □ ♆	27	18	28
☽ ✶ ☿	27	20	06
☽ △ ♂	27	27	41
☽ v ☉ ♋	28	12	03
☽ ✶ ♃	28	15	14
☽ Apogee	28	23	50
☽ ✶ ♅	29	09	32
☉ Q ☊	29	11	59
☌ 80 ♄	29	14	03
☉ ☐ ♃	29	15	34
☽ ✶ ☉	29	22	03
☿ ⚺ ♆	29	25	43
♄ Retrograde	30	06	26
☽ ☌ ♆ 3°·5N	30	13	18
☉ 40 ♂	30	16	52
☿ □ Node S	30	19	16
☽ □ ♂	30	19	50
☽ ✶ ♄	30	21	02
☽ △ ☊	30	21	03
♄ ☍ ☊	30	22	39
☽ ✶ ♇	30	26	16
☽ □ ♃	30	27	27

May

☿ p ♆	1	11	12
☿ ✶ ♂	1	12	05
☿ □ ☊	1	13	08
☌ v ♆	1	14	16
☌ □ ♄	1	14	18
♂ ⚺ ☊	1	14	30

MAY—*contd.*

	d	h	m
♂ 150 ♄	1	17	48
☌ 80 ♇	1	18	00
♅ ∠ ♆	2	05	30
☽ Equat N	2	14	34
☽ ☌ ☌ 3°·6N	2	20	09
☿ □ ♇	2	27	23
☽ □ ☊	3	07	02
☽ □ ♄	3	07	45
☽ ✶ ♂	3	09	50
☽ △ ♃	3	13	33
☽ ☌ ☿ 2°·9N	3	14	17
Helio ♂ ☍ ♄	*3*	*18*	*55*
☽ ☌ ♅ 4°·7N	3	28	42
☿ 80 ♂	4	10	59
☿ Q ♄	4	11	09
☿ ⚺ ♅	4	11	39
☿ Q ♇	4	13	08
☉ ⚺ ☿	4	19	42
☿ ⚺ ♆	4	22	57
☿ □ ☊	4	24	13
☿ △ ♃	4	26	58
☽ ☌ ☉ N.M.	4	28	15
☽ ✶ ♆ ♋	5	11	29
☽ ✶ ☊	5	14	21
☽ △ ♄	5	15	49
☌ 150 ♇	5	17	48
☽ △ ♇	5	20	38
☌ ⚺ ♆	5	20	50
☌ p ♆	5	22	22
☿ 40 ♆	5	23	27
☿ ☍ ♃	5	27	19
☽ P ☉	6	10	09
Helio ☿ ☌ ☌	*6*	*17*	*29*
☿ 80 ☊	6	17	42
☌ □ ☊	6	23	34
☽ □ ♆	7	17	42
☌ □ ♄	7	18	59
☽ ✶ ☌	7	22	03
Helio ☿ ☌ ♆	*7*	*22*	*27*
☽ ☍ ♃	7	26	39
☽ ☌ ☿ 3°·2N	7	29	20
☿ ☌ ♅ 1°·4S	8	13	44
☿ ∠ ♆	8	17	04
☽ ✶ ♅	8	20	34
☽ ✶ ☿	8	20	42
☉ ✶ ♆	9	08	27
♃ ⚺ ♇	9	17	30

MAY—*contd.*

	d	h	m
☽ M.Dec.22°N15'	9	17	47
☽ △ ♆	9	22	24
☿ △ ♃	9	22	25
☿ □ ♇	9	22	55
☽ ✶ ☉	9	23	26
☽ ☌ ♌	9	24	21
☽ ☍ ♑	9	26	14
☽ ☍ ♇	10	06	49
Helio ☿ ☌ ♆	*10*	*07*	*00*
☽ △ ☿	10	07	34
☿ □ ♌	10	08	55
☉ ⚺ ☿	10	09	01
☿ ⚺ ♆	10	09	50
☿ P ♅	10	10	17
☿ □ Node S	10	11	21
☉ ✶ ♌	10	12	07
☿ ⚺ ☿	10	19	02
☿ ☿ ♌	10	20	41
☿ ☿ ♇	10	20	48
☿ ⚺ ♅	10	22	06
☿ ☿ ♑	10	23	01
☽ □ ♅	10	24	48
☿ □ ♂	10	27	51
☿ ☐ ♃	10	28	31
☽ □ ☿	11	09	03
☽ v ☉	11	11	23
☉ △ ♑	11	14	51
☽ □ ☿	11	15	47
☽ □ ☉ ♄	12	06	43
☽ △ ♃	12	09	46
☽ △ ☿	12	15	43
☽ ✶ ♂	12	17	53
☽ △ ♅	12	28	03
☽ △ ☿	13	20	18
☿ ∠ ♂	13	21	24
☉ 150 ♃	13	23	53
☽ Perigee	13	27	23
☽ ☍ ♆	13	28	44
☿ 40 ♆	14	06	10
☽ ✶ ♌	14	06	23
☽ △ ♑	14	08	09
☉ △ ♇	14	08	24
☽ □ ♃	14	12	02
☽ △ ♇	14	12	41
☽ △ ☉	14	13	00
☿ ✶ ♂	14	19	37
☽ □ ♂	14	22	49
☿ 80 ♌	14	24	16

MAY—*contd.*

	d	h	m
☽ Equat S	15	20	07
☿ ✶ ♆	16	06	50
☽ □ ♌	16	08	28
☽ □ ♑	16	10	31
☽ ✶ ♃	16	14	10
☿ ✶ ♌	16	14	41
☽ □ ♇	16	15	09
♂ 160 ♑	16	19	54
☽ △ ♂	16	27	49
Helio ☿ ☍ ♅	*16*	*28*	*16*
☿ △ ♑	16	28	34
☽ ☍ ☿	17	06	17
☽ ☍ ☿	17	08	42
☽ ☍ ♅	17	09	35
☿ 150 ♃	17	27	21
☿ ∠ ♆	18	10	30
☽ △ ♆	18	10	34
☽ △ ♇	18	11	13
☽ △ ♌	18	11	16
☿ ☍ ♅ 1°·2S	18	13	44
☽ ✶ ♑	18	13	49
☽ ✶ ♇	18	18	37
☽ ☍ ☿	18	20	00
☽ ☍ ☉ F.M.	18	26	43
☿ Node N ♄	19	20	56
☽ □ ♆	20	16	07
☽ ☍ ♃ 1°·7S	20	22	35
♂ 160 ♇	20	23	30
☿ ☿ ♌	20	24	31
☿ ☐ ♃	21	08	51
☿ P ♅	21	11	29
☽ p ☉	21	12	37
☉ ☍ ☿ Sup.	21	18	36
☽ ☍ ☉	21	20	09
☽ △ ♅	21	21	17
☿ ☿ ♆	21	21	26
☿ P ☉	21	25	03
☉ ☿ ♆	21	25	17
☽ △ ☿	21	28	30
☿ 160 ♃	22	12	27
♆ △ ♌	22	17	30
☽ M.Dec.22°S19'	22	18	39
♂ ✶ ♅	22	20	10
☽ ☍ ♌	22	24	45
☽ ✶ ♆	22	24	46
☽ ☍ ♑ 0°·5N	22	27	53
Occultation			

MAY—*contd.*

	d	h	m
☉ 160 ♃	22	29	11
☿ ∠ ♌	23	06	25
☿ p ♑	23	12	33
☿ ⚻ ♅	23	14	37
☽ v ☉	23	19	07
☿ ⚻ ♂	23	21	30
☿ ☐ ♑	23	23	54
☽ △ ☉	23	28	20
☽ □ ♅	24	07	47
☽ △ ♆	24	11	32
☿ Perigee	24	12	47
Helio ☿ ☍ ♃	*24*	*14*	*47*
☽ □ ☿	24	21	49
☉ ∠ ♌	24	29	04
☿ ☐ ♇	25	07	19
☿ p ♃	25	07	58
☿ v ♇	25	08	37
☿ 40 ♌	25	13	41
☿ 80 ♆	25	13	48
☽ ✶ ♃	25	18	22
☉ ⚻ ♅	25	26	01
♆ △ ♌	25	29	30
☿ 6°·6N *Aldebaran*	26	17	02
☿ v ♑ ♄	26	17	29
☉ ☐ ♑	26	17	30
☽ Apogee	26	18	57
☽ ✶ ♅	26	20	31
☽ □ ☉	26	22	03
☽ △ ♂	26	25	36
☿ V ♌	27	09	27
☽ □ ☿	27	13	35
☽ ✶ ☿	27	17	20
☽ ☍ ♆ 3°·7N	27	22	13
☽ △ ♌	27	25	02
☽ ✶ ♑	27	27	51
☽ □ ♃	28	06	23
☿ 40 ♅	28	07	49
☽ ✶ ♇	28	09	49
Helio ☿ ☍ ♑	*28*	*27*	*24*
☿ ⚻ ☿	29	05	35
☿ P ♂	29	14	13
☽ ✶ ☉	29	15	17
☽ □ ♂	29	16	57
♑ p ☉	29	17	29
☉ ☐ ♇	29	18	07
☽ Equat N	29	23	30
☉ v ♇	29	24	46

MAY—*concld.*

	d	h	m
☿ ☌ ♌	29	28	35
☿ □ ♆	30	06	52
☉ 40 ♌	30	07	00
☽ □ ♌	30	11	57
☉ 80 ♆	30	12	14
☽ ✶ ☿	30	13	28
☽ □ ♑	30	14	43
☽ △ ♐	30	16	47
♀ ✶ ♌	30	17	21
☿ ∠ ♓	30	18	35
☽ □ ♇	30	20	34
☿ 150 ♑	30	20	48
♀ ✶ ♆	30	22	16
Helio ☿ ☌ ♀	*30*	*25*	*06*
☿ ☍ ♐	31	08	40
☿ V ♂	31	13	26
☽ ☌ ♓ 4°·8N	31	15	54
♀ △ ♑	31	20	58
☉ ☌ ♂	31	26	58
☽ ✶ ♂	31	29	18

June

☿ 150 ♇	1	08	42
♂ v ♐	1	09	21
♀ 150 ♐	1	14	48
☽ ✶ ♌	1	19	47
♂ 160 ♐	1	20	38
☽ ✶ ♆	1	20	41
☽ △ ♑	1	22	39
☽ ☌ ♀ 3°·2N	1	25	25
☽ △ ♇	1	28	22
☉ v ♑ ♋	2	08	58
♀ △ ♇ ♌	3	09	04
☽ ☌ ☉ N.M.	3	15	52
☿ □ Node N	3	17	58
☽ □ ♆	3	26	07
☉ V ♌	3	28	08
☽ ☍ ♐	3	29	04
☿ 160 ♑	4	19	47
☽ ☌ ☿ 3°·7N	4	21	12
♐ P ☉	4	29	29
☽ ✶ ♓	5	06	06
☽ ☌ ♂ 1°·6N	5	20	18
☽ V ☉	5	23	42
☽ M.Dec.22°N22'	5	24	01
☉ 40 ♓	5	26	01
☽ ☌ ♌	5	28	17

JUNE—*contd.*

	d	h	m
☽ △ ♆	6	05	35
☽ ☍ ♑	6	06	57
☽ ☍ ♇	6	12	30
☿ 160 ♇	6	13	30
☽ ✶ ♌	6	19	18
♐ □ ♓	7	05	30
☽ □ ♓	7	09	06
☉ V ♂	7	19	23
☿ ✶ ♓	7	19	51
Helio ⊕ □ ♆	*7*	*24*	*01*
☽ Perigee	7	28	45
☽ ✶ ☉	7	29	17
☽ △ ♐	8	10	05
♌ 160 ♐	8	25	21
☽ □ ♌	8	26	54
Helio ☿ ☍ ♆ ♋	*9*	*07*	*29*
Helio ♌ ☌ ♓	*9*	*11*	*14*
☽ △ ♓	9	11	46
☽ ✶ ☿	9	17	03
☉ ☌ ♌	9	18	13
♌ Q ♆	9	20	37
Helio ⊕ □ ☿	*9*	*23*	*12*
♌ ∠ ☍	9	23	20
☉ □ ♆	9	25	04
☽ ✶ ♂	10	06	14
☽ ✶ ♌	10	09	33
☽ ☍ ♆	10	10	49
☽ □ ☉	10	11	29
☽ △ ♑	10	11	43
☽ □ ♐	10	12	13
☿ 160 ♐	10	12	35
☉ 150 ♑	10	14	33
☽ △ ♇	10	17	33
☉ ☍ ♐	10	20	58
☉ V ☿	11	10	23
☽ △ ♌	11	10	26
☉ ∠ ♓	11	13	47
♌ ∠ ♌	11	16	51
☽ □ ♌	11	21	05
☿ v ♐	11	24	19
♂ Q ♓	11	25	30
☽ □ ☿	11	26	33
☽ Equat S	11	26	41
☽ □ ♂	12	11	50
☽ □ ♌	12	12	38
☽ □ ♑	12	14	43
☽ ✶ ♐	12	14	59

JUNE—*contd.*

	d	h	m
♌ ☐ ♑	12	15	55
☽ △ ☉	12	18	29
☽ □ ♇	12	20	46
♌ ☌ ♓	13	14	17
☽ ☍ ♓	13	18	44
☉ 150 ♇	13	27	04
♂ △ ♆	14	11	49
☽ △ ☿	14	13	04
☽ △ ♌	14	16	48
☽ △ ♆	14	18	27
☽ △ ♂	14	18	46
☽ ✶ ♑	14	18	55
♂ P ☉	14	20	29
♂ 150 ♐	14	21	09
♂ ☍ ♑	14	21	30
♐ ☌ ♑	14	23	30
☽ ✶ ♇	14	25	18
♌ ☐ ♇	15	12	13
♌ 40 ♌	15	15	28
☿ Q ♓	15	16	46
♌ v ♇	15	29	29
☽ ☍ ♌ ♋	16	05	52
♌ 80 ♆	16	10	46
☿ △ ♆	16	17	12
☿ 150 ♐	16	17	38
☿ ☍ ♑	16	19	30
♐ □ ♆	16	20	30
☽ ☌ ♐ 2°·0S	16	24	39
☽ □ ♆	16	24	43
☽ ☍ ☉ F.M.	17	14	01
♌ v ♂	17	16	44
♌ 4°·8N *Aldebaran*	17	26	22
☽ v ☉	17	28	25
☿ V ♌	17	28	42
☽ △ ♓	18	08	00
♌ 40 ♂	18	14	25
♑ ✶ ♆	18	17	30
☿ P ☉	18	21	29
☿ ☌ ♂	18	21	35
☽ M.Dec.22°N23'	18	26	29
☽ ☍ ♌	19	07	20
☽ ☌ ♑ 4°·8N	19	09	24
Occultation			
☽ ✶ ♆	19	09	30
☽ ☍ ♂	19	15	55
♌ v ♑	19	16	22
☿ ☍ ♇	19	16	30
☽ ☍ ♑	19	16	52

JUNE—*contd.*

	d	h	m
☿ v ☊	20	08	29
♂ ☌ ♇	20	09	06
☉160 ♄	20	10	13
☿ p ♄	20	10	17
☽ □ ♅	20	18	29
Helio ☿ ☌ ♅	*21*	*10*	*21*
☿ 5°·7 *Pollux*	21	10	35
☽ △ ☿	21	13	14
☽ ✶ ♃	21	19	34
♆ Retrograde	21	20	09
☉ Enters ♋			
Summer Solstice	21	21	24
☿ p ☿	21	21	45
☿ 40 ♅	22	10	01
☿ 80 ♅	22	17	14
☽ △ ☉	22	21	29
♅ ☿ ☊	22	25	22
☽ ✶ ♅ ♋	23	06	55
☿ p ♃	23	10	49
♂ 5°·6S *Pollux*	23	12	40
☽ Apogee	23	13	20
☿ P ♂	23	15	59
☿ ⚺ ☊	23	19	38
☿ ☌ ♃	23	22	18
♂ p ♃	23	22	38
☿ GtElong 25°E02'	23	28	46
☽ ☌ ♆ 3°·8N	24	06	23
☽ △ ☊	24	07	23
☽ □ ♃	24	07	34
☿150 ♄	24	08	00
☽ ✶ ♄	24	08	39
☽ □ ☿	24	08	43
☉ 160 ♇	24	09	10
☿ □ ♆	24	15	33
☽ ✶ ♇	24	16	46
☽ △ ♂	24	23	06
♂ 80 ♅	24	28	27
☽ △ ☿	24	28	40
☽ □ ☉	25	15	16
♃150 ☊	25	21	30
☿ ∠ ♅	26	07	10
☽ Equat N	26	08	30
☽ △ ♃	26	18	56
☽ □ ☊	26	19	12
☽ □ ♄	26	20	05
☽ ✶ ☿	26	27	06
☿ Node S	26	27	36

JUNE—*concld.*

	d	h	m
☽ □ ♇	26	28	12
☽ □ ♂	27	12	37
☿150 ♇	27	13	49
♂ p ♄	27	18	49
☽ □ ☿	27	19	47
☉ ✶ ♅	27	23	23
☽ ☌ ♅ 4°·8N	27	27	01
☽ ✶ ☉	28	06	36
☉ v ☿	28	25	49
☽ ✶ ☊	28	28	14
☽ △ ♄	28	28	49
☽ ✶ ♆	29	06	08
☉ 160 ♃	29	10	45
☽ △ ♇	29	12	34
☽ ✶ ♂	29	24	04
☽ ✶ ☿ ♋	30	06	20
☿ □ ♃	30	07	54
☿ P ☉	30	16	09

July

☽ ☌ ♃	1	08	34
☽ □ ♆	1	11	30
☽ v ☉	1	14	59
☿160 ♄	1	25	30
☽ ☌ ☿ 1°·6N	1	27	18
☽ ✶ ♅	2	16	53
☽ ☌ ☉ N.M.	2	24	46
Total Solar Eclipse			
☽ M.Dec.22°N23'	3	09	06
☽ ☌ ☊	3	12	23
☽ ☌ ♄	3	12	29
☽ △ ♆	3	14	09
☿ ☐ ♆	3	18	04
☽ ☌ ♇	3	19	52
♄ ☌ ☊	4	10	18
☽ ☌ ♂ 0°·1S			
Occultation	4	11	11
☽ ☌ ☿ 3°·3S	4	15	19
♂ ☐ ♃	4	18	03
☽ □ ♅	4	18	40
⊕ Aphelion	4	27	43
☽ Perigee	5	10	30
☽ △ ♃	5	11	55
☿160 ♇	5	14	08
☿ ⚺ ♂	5	15	47
☿ Node N	5	18	31
☽ ✶ ☿	6	15	31
☽ △ ♅	6	19	55

JULY—*contd.*

	d	h	m
☽ ✶ ☉ ♋	7	10	20
☿ ⚺ ☿	7	11	50
☿ Apogee	7	12	25
☽ □ ♃	7	12	52
☽ △ ♄	7	14	37
☽ ✶ ☊	7	15	01
☽ ☌ ♆	7	16	43
☽ △ ♇	7	22	22
♂ ☐ ♆	7	22	44
☿ Retrograde	7	28	44
☉ v ♃	7	29	29
Helio ☿ ☌ ♃	*8*	*18*	*39*
☽ ✶ ♂	8	18	42
☽ ✶ ☿	8	19	09
☿ ✶ ♅	8	21	03
☉ 150 ♃	8	21	22
☿ 160 ♃	8	22	31
☽ □ ☿	8	22	05
Helio ☿ ☌ ♃	*8*	*24*	*43*
☿ ☌ ♂ 3°·8S	8	27	57
♃ p ☉	9	07	12
☽ Equat S	9	08	27
Helio ☿ ☌ ☿	*9*	*09*	*01*
☽ ✶ ♃	9	15	03
☽ □ ☉	9	16	28
☽ □ ♄	9	16	55
☽ □ ☊	9	17	38
☉ ☌ ♄	9	22	37
☽ □ ♇	9	25	08
☽ □ ☿	10	22	20
☉ ☐ ♅	10	23	04
☽ □ ♂	10	24	38
☽ ☌ ♅	10	25	53
♄ p ☉	10	29	29
☽ △ ☿	11	07	00
☉ △ ♆	11	10	03
☽ ✶ ♄	11	21	15
☽ △ ☊	11	22	16
☽ △ ♆	11	24	00
♂ □ ♅	11	24	48
☽ △ ☉	11	25	05
☽ ✶ ♇	12	05	59
☿ ☐ ♆	12	21	06
☽ △ ♅	12	27	03
♂ 160 ♄	12	28	21
☽ △ ♂	13	09	42
☽ v ☉	13	13	46
☽ ☌ ♃ 2°·3S	13	25	41

JULY—*contd.*

	d	h	m
☽ □ ♆ ♋	14	07	01
☉ ☌ ♇	14	20	17
☽ p ☉	14	25	52
☉ v ♆	15	09	42
☽ △ ♅	15	16	42
☽ ☌ ☿	16	10	14
☽ M.Dec.22°S22'	16	10	44
☿ v ♃	16	11	19
☽ ☌ ♄ 0°·2N	16	12	48
Occultation			
☿150 ♃	16	13	12
☽ ☌ ♌	16	14	39
☽ ✶ ♆	16	16	25
☽ ☌ ☉ F.M.			
Partial Solar Eclipse	16	27	08
☿ ☌ ♄	17	11	02
☽ ☌ ☿	17	17	10
Helio ☿ ☌ ♄	*17*	*27*	*00*
☽ □ ♅	17	27	25
☽ ☌ ♂	18	11	20
☿ Q ♅	18	20	30
☽ ✶ ♃	18	21	25
☿ ☐ ♃	18	23	20
♂ □ Node N	18	23	29
☿ △ ♆	18	23	40
☉ 80 ♅	19	13	13
☽ ✶ ♅	20	15	47
♂ 160 ♇	20	16	35
☽ Apogee	20	29	29
☽ □ ♃ ♋	21	09	36
☽ ✶ ♄	21	11	58
☽ ☌ ♆ 3°·8N	21	13	14
☿ ☌ ♇	21	14	02
☽ △ ♌	21	14	26
☉ ☌ ☿ Inf.	21	18	05
☽ ✶ ♇	21	22	48
☽ △ ☿	21	23	49
☽ △ ☿	22	11	27
☽ △ ☉	22	14	03
♃ P ♄	22	27	29
☉ ☐ ♃	23	10	18
☽ Equat N	23	16	05
☽ △ ♂	23	19	02
☿ 6°·0S *Pollux*	23	21	25
☽ △ ♃	23	21	41
☽ □ ♄	23	23	59

JULY—*concld.*

	d	h	m
☽ □ ♌	23	26	40
☽ □ ♇	24	10	48
☽ □ ☿	24	18	39
Helio ☿ ☌ ♄	*24*	*19*	*53*
☽ □ ☿	24	20	16
☿80 ♅	24	20	25
☿ ☌ ☿ 5°·7S	25	05	56
☽ □ ☉	25	06	47
☿ 80 ♅	25	10	46
☽ △ ♅ 4°·8N	25	12	43
♂ △ ♃	25	17	48
☽ □ ♂	26	08	39
☽ △ ♄	26	09	56
☿11°·6S *Pollux*	26	11	55
☽ ✶ ♌	26	12	45
☽ ✶ ♆	26	14	24
☽ △ ♇	26	20	22
☉ ☐ ♆	26	22	03
Helio ⊕ □ ♅	*26*	*26*	*04*
☽ ✶ ☿	26	27	13
☽ V ☉	26	29	11
♂ 150 ♄	27	08	21
☽ ✶ ☿	27	09	55
☿ □ Node S	27	18	32
☽ ✶ ☉	27	19	40
☿ ☐ ♃	27	28	14
☽ P ☉ ♋	28	09	15
☽ ☌ ♃	28	14	33
☽ ✶ ♂	28	18	09
☿ P ♂	28	20	29
☽ □ ♆	28	20	49
Helio ☿ ☌ ♂	*29*	*08*	*10*
☉160 ♄	29	10	37
♂ ⚺ ☿	29	21	43
☽ ✶ ♅	29	28	05
☉ □ ♅	29	28	39
☽ M.Dec.22°N23'	30	19	11
☽ ☌ ♄	30	19	22
☽ ☌ ☿	30	22	33
☽ △ ♆	30	23	42
☿ ☐ ♆	30	25	02
♂ 150 ♆	30	25	48
☽ ☌ ♇	30	28	57
☽ ☌ ☿ 4°·5S	31	09	02
☽ ☌ ☿ 0°·6S	31	26	21
☽ □ ♅	31	29	24

AUGUST—*contd.*

	d	h	m
August			
☽ ☌ ☉ N.M.	1	08	42
☿ Direct	1	09	20
☽ △ ♃	1	18	21
☿160 ♄	1	20	28
☽ ☌ ♂ 1°·7S	1	26	18
☿ P ☉	2	07	12
☽ Perigee	2	12	41
☿ □ ♅	2	15	33
☽ △ ♅	2	29	20
☽ □ ♃	3	18	12
☽ △ ♄	3	19	35
☽ ✶ ♌	3	22	51
☽ ☌ ♆	3	24	02
Helio ☿ ☌ ♆	*3*	*24*	*40*
☽ △ ♇	3	29	04
☉ 160 ♇ ♋	4	06	43
☽ ✶ ☿	4	10	00
♂ 150 ♇	4	21	30
☽ ✶ ☿	5	11	34
☽ Equat S	5	15	00
☽ ✶ ☉	5	16	00
☽ ✶ ♃	5	19	01
☽ □ ♄	5	20	20
☿ p ☿	5	22	52
☽ □ ♌	5	23	44
☿ 9°·3S *Pollux*	5	27	44
☽ □ ♇	6	06	21
☽ ✶ ♂	6	07	58
☿160 ♇	6	12	32
☽ □ ☿	6	13	11
☽ ☌ ♅	7	08	27
☉ △ ♃	7	12	57
☽ □ ☿	7	19	37
☽ □ ☉	7	23	05
☽ v ☉	7	23	19
☽ ✶ ♄	7	23	35
☽ △ ♌	7	27	20
☽ △ ♆	7	28	46
☉150 ♄	8	05	54
☽ ✶ ♇	8	10	26
☿ 80 ♅	8	10	36
☿ Perigee	8	14	24
☽ □ ♂	8	14	51
☽ △ ☿	8	20	34
☽ p ☉	8	24	26
☿ △ ♃	8	29	08

AUGUST—*contd.*	d	h	m
♂ V ♅	9	14	57
♀ 150 ♄	9	15	42
☿ Gt.Elong 19°W00'	9	28	38
☽ ☌ ♃ 2°·5S	9	28	55
☽ △ ♀	10	07	51
☽ △ ☉	10	10	11
☽ □ ♆	10	11	45
☉ ⚺ ♌	10	12	47
☽ △ ♂	10	25	22
☉ 150 ♆ ♋	11	06	19
♀ ⚺ ♌	11	10	26
☿ ☐ ♃	11	14	14
♃ Direct	11	19	07
☽ △ ♅	11	23	09
♀ 150 ♆	11	23	11
♅ Retrograde	12	07	54
☽ M.Dec.22°S24'	12	15	24
☽ ☌ ♄ 0°·4N *Occultation*	12	15	24
☽ ☍ ♌	12	20	19
☽ ✶ ♆	12	21	30
Helio ☿ ☌ ♅	*13*	*07*	*34*
☽ ☍ ☿	13	26	06
♂ 40 ♌	14	09	01
☽ □ ♅	14	10	18
☿ ☐ ♆	14	11	30
♀ 150 ♇	14	11	35
☉ 150 ♇	14	11	36
☉ ☌ ♀ Sup.	14	11	37
☽ ✶ ♃	14	26	08
♂ P ♅	14	29	29
♂ 160 ♆	15	07	54
☿ 160 ♄	15	17	54
☽ ☍ ☉ F.M.	15	18	00
☽ ☍ ♀	15	18	48
☿ Node N	15	20	19
☽ ☍ ♂	16	06	11
Helio ⊕ □ ☿	*16*	*14*	*25*
☿ □ ♅	16	22	32
☽ ✶ ♅	16	22	41
♀ V ♅	16	26	55
☽ □ ♃	17	14	48
☽ ✶ ♄	17	15	05
☽ Apogee	17	16	19
☽ ☌ ♆ 3°·7N	17	18	43
☉ V ♅	17	19	48
☽ △ ♌	17	20	00

AUGUST—*contd.*	d	h	m
♂ ☐ ♄	17	23	04
☽ ✶ ♇	17	28	05
♂ 0°·7N *Regulus*	17	28	56
♅ P ☉ ♋	18	06	45
♀ 40 ♌	18	27	45
☿ 160 ♇	19	15	41
♃ ⚺ ♄	19	19	54
☽ △ ☿	19	21	10
♀ 160 ♆	19	21	36
☽ Equat N	19	22	10
☽ □ ♄	19	27	26
☽ △ ♃	19	27	27
☽ □ ♌	20	07	56
☉ 40 ♌	20	08	56
☿ P ♅	20	11	15
☿ Perigee	20	12	04
☽ □ ♇	20	16	20
♂ ∠ ♌	21	05	30
☽ △ ☉	21	05	30
♀ ☐ ♄	21	05	49
☽ △ ♀	21	09	35
♀ 0°·9N *Regulus*	21	09	49
☉ 160 ♆	21	09	58
☿ 150 ♄	21	13	47
☽ △ ♂	21	14	00
☽ V ☉	21	14	00
☿ △ ♃	21	15	30
Helio ☿ ☍ ♃	*21*	*17*	*14*
☽ ☌ ♅ 4°·7N	21	20	04
☽ △ ♄	22	14	24
☽ P ☉	22	15	46
☿ ⚺ ♌	22	17	43
☽ ✶ ♌	22	18	38
☽ □ ☿	22	18	48
☽ ✶ ♆	22	20	50
♀ ∠ ♌	22	23	11
Helio ♀ ☌ ♂	*22*	*23*	*44*
☉ ☐ ♄	22	26	18
☽ △ ♇	22	27	02
☿ 150 ♆	23	07	58
☽ □ ☉	23	20	21
☽ □ ♀	23	25	45
☽ □ ♂	23	26	47
♂ P ☉	24	21	29
♀ ☌ ♂	24	22	35
☽ ☍ ♃	24	23	19
☿ 150 ♇	24	23	45

AUGUST—*concld.*	d	h	m
☽ □ ♆	24	28	46
☉ ∠ ♌ ♋	25	09	21
Helio ☿ ☍ ♄	*25*	*11*	*27*
☽ ✶ ☿	25	12	23
♂ Apogee	26	06	49
☽ ✶ ☉	26	07	00
♀ ☐ ♇	26	10	18
☽ ✶ ♂	26	11	25
☽ ✶ ♀	26	13	08
☽ ✶ ♅	26	13	51
☿ V ♅	26	18	18
♀ △ ♅	26	21	11
☽ ☍ ♄	26	27	13
☽ ☌ ♌	27	07	18
☽ △ ♆	27	08	56
☽ ☍ ♇	27	14	20
♂ ☐ ♇	27	19	02
☿ 40 ♌	27	21	26
☽ M.Dec. 22°N28'	27	24	50
☿ 160 ♆	28	09	04
☽ □ ♅	28	15	55
♂ △ ♅	28	16	35
☿ ☐ ♄	28	28	07
☽ △ ♃	29	05	36
☿ 1°·3N *Regulus*	29	08	37
☉ ☐ ♇	29	18	31
♀ □ Node N	30	06	21
☽ ☌ ☿ 1°·9S	30	07	52
☿ ∠ ♌	30	08	11
☉ △ ♅	30	08	45
☽ △ ♅	30	15	38
☽ ☌ ☉ N.M.	30	16	07
☿ □ Node N	30	17	13
☽ ☌ ♂ 3°·1S	30	17	44
☽ Perigee	30	21	23
Helio ♀ ☍ ♆	*30*	*23*	*00*
☽ ☌ ♀ 2°·9S	30	23	42
☽ △ ♄	30	27	45
☽ □ ♃	30	29	09
☽ ✶ ♌	31	07	19
☽ ☍ ♆	31	09	05
☽ △ ♇	31	14	17

September

☿ ☐ ♇ ♋	1	12	37
☽ □ ♌	1	18	08
☿ △ ♅	1	19	44
☽ Equat S	1	23	31

SEPTEMBER—*contd.*	d	h	m
♀ △ ♄	1	24	27
☽ □ ♄	1	27	11
☽ ✶ ♃	1	28	55
☽ □ ♇	2	06	33
☽ v ☉	2	13	26
☽ □ ♇	2	14	08
☉ ☌ ♂	2	16	12
♀ □ ♃	2	21	57
☽ p ☉	3	09	09
♀ ✶ ♌	3	14	00
☽ ☍ ♅	3	15	53
☿ ☌ ♂ 0°·7N	3	16	10
☽ ✶ ♂	3	22	47
☽ ✶ ☿	3	22	56
☽ ✶ ☉	3	23	32
Helio ☿ ☌ ♂	*3*	*26*	*06*
☽ ✶ ♄	3	28	50
☉ ☌ ♂ Sup.	4	07	11
☽ △ ♌	4	08	10
☽ ✶ ♀	4	10	06
☽ △ ♆	4	10	44
☽ ✶ ♇	4	16	35
♀ ☍ ♆	4	16	52
♀ p ♆.	5	07	58
Helio ☿ ☍ ♆	*5*	*14*	*09*
☿ △ ♄	5	18	07
☽ □ ♂	6	06	21
☽ □ ☉	6	08	40
☿ □ ♃	6	12	50
☽ ☌ ♃ 2°·3S	6	12	50
☽ □ ☿	6	12	57
☽ □ ♆	6	16	28
☿ ✶ ♌	6	18	34
☽ □ ♀	6	21	38
☉ △ ♄	6	27	28
♀ △ ♇	7	09	17
☿ ☍ ♆	7	12	52
♀ □ ♅	7	19	43
♆ p ☉	7	24	16
☽ △ ♅	7	28	17
☽ △ ☌ ♋	8	18	26
☽ ☌ ♄ 0°·4N			
Occultation	8	19	13
☉ □ ♃	8	20	54
☽ □ ♃	8	20	57
☽ M.Dec.22°S32'	8	21	37

SEPTEMBER—*contd.*	d	h	m
☽ △ ☉	8	22	44
☽ ☍ ♌	8	23	07
☽ ✶ ♆	8	25	50
☉ ✶ ♌	8	28	16
☽ △ ☿	9	08	33
☿ △ ♇	9	08	33
☌ △ ♄	9	09	48
Helio ☿ ☌ ♀	*9*	*13*	*08*
☽ △ ♀	9	14	03
☿ □ ♅	9	15	27
☉ ☍ ♆	10	12	54
☽ □ ♅	10	15	29
☽ ✶ ♃	11	10	49
♀ 80 ♃	11	11	41
♃ 150 ♌	11	11	54
☿ 80 ♃	12	05	59
☌ ✶ ♌	12	06	01
☌ □ ♃	12	14	30
♀ Q ♌	12	23	44
☽ ✶ ♅	12	27	57
☿ Q ♌	12	28	40
☽ Apogee	13	19	02
☽ ✶ ♄	13	19	33
☿ ☌ ♀ 0°·3S	13	20	41
☽ △ ♌	13	22	48
☽ ☌ ♆ 3°·6N	13	23	22
☽ □ ♃	13	24	04
☉ △ ♇	13	25	02
☽ ☍ ☌	13	25	41
☌ p ♆	14	08	55
☽ ✶ ♇	14	09	18
☽ ☍ ☉ F.M.	14	10	03
☌ ☍ ♆	14	10	54
☉ □ ♅	14	12	18
☿ v ♀	14	23	33
☽ ☍ ♀	14	29	03
☽ ☍ ☿ ♋	15	06	38
☽ v ☉	15	19	15
☽ □ ♌	15	19	48
☽ Equat N	15	27	33
☽ ✶ ♅	16	18	54
☿ Q ♃	16	27	29
☿ 80 ♌	17	08	32
☽ □ ♄	17	16	27
☽ □ ♌	17	16	56
☽ △ ♃	17	17	56

SEPTEMBER—*contd.*	d	h	m
☽ □ ♇	17	20	18
☽ ☌ ♅ 4°·5N	17	25	07
☿ 150 ♅	17	26	26
☉ v ☿	17	28	44
☿ p ☉	18	07	15
Helio ☿ ☍ ♅	*18*	*08*	*27*
♀ Q ♃	18	12	34
♀ 80 ♌	18	12	49
♄ Direct.	18	14	16
☉ v ♀	18	15	42
☿ 160 ♆	18	16	54
☽ △ ♄	18	19	20
☽ ✶ ♌	18	20	40
☽ ✶ ♆	18	25	30
☽ △ ☿	19	07	48
☽ △ ♇	19	08	31
♀ 150 ♅	19	13	45
☽ △ ☉	19	19	23
☿ △ ♇	19	21	30
♀ P ☉	19	22	14
☉ Q ♌	19	23	08
♀ 160 ♆	19	29	00
☉ 80 ♃	20	06	55
☿ □ ♅	20	10	11
☿ v ☿	20	11	03
☽ △ ♀	20	16	38
☽ △ ☿	20	22	50
Helio ⊕ □ ♃	*20*	*29*	*29*
☿ p ☿	21	07	05
☽ ☍ ♃	21	10	20
☽ □ ♆	21	10	28
☽ □ ☿	21	19	29
♃ □ ♆	21	21	30
♀ v ☿	21	24	33
☽ □ ☉ ♋	22	08	11
☽ ✶ ♅	22	20	57
☿ □ ♄	22	21	55
☿ V ♆	22	23	21
☿ Node S	22	26	59
☽ □ ♀	22	29	00
☿ □ ♌	22	29	15
☽ ☍ ♄	23	11	04
☽ ☌ ♌	23	11	59
☽ □ ☿	23	12	47
☉ Enters ♎			
Autumal Equinox	23	13	20

SEPTEMBER—*contd.*	d	h	m
☽ M.Dec. 22°N41'	23	13	52
☽ △ ♆	23	16	20
☿ p ♆	23	19	46
☽ ☌ ♇	23	22	47
☽ ✶ ♂	23	27	33
☿ 160 ♅	23	27	46
☽ ✶ ☉	24	16	37
☿ 150 ♆	24	19	30
☽ □ ♅	24	24	39
☿ ✶ ♄	24	26	28
♀ P ♂	24	26	52
☽ ✶ ♀	25	13	01
☽ △ ♄	25	19	46
☽ ✶ ☿	25	21	39
♀ □ ♑	25	24	54
♀ V ♆	25	27	50
♀ □ ♌	26	07	31
☽ △ ♅	26	25	22
☿ □ ♇	26	29	14
♀ 160 ♅	27	12	21
☽ △ ♑	27	14	18
☽ ✶ ♌	27	14	33
☉ 80 ♋	27	17	51
☽ ☌ ♆	27	18	49
☽ □ ♄	27	20	13
☽ △ ♇	27	24	49
♂ Q ♋	28	05	59
☽ Perigee	28	07	54
☽ v ☉	28	08	11
♀ 150 ♆	28	08	21
☽ △ ♂ 4°·1S	28	09	27
☉ v ♂	28	11	25
♑ ☌ ♌	28	11	30
Helio ♀ ☌ ♅	*28*	*18*	*08*
☽ □ ♌	28	21	25
☽ ☍ ☉ N.M.	28	23	56
☿ 1°·4N *Spica*	28	28	08
♀ ✶ ♄	28	29	09
♂ p ☉ ♋	29	06	09
♀ p ♆	29	07	58
☉ 150 ♅	29	09	50
☽ Equat S	29	09	58
☿ 80 ♑	29	10	57
☽ □ ♌	29	12	21
☽ □ ♑	29	13	40
☽ P ☉	29	13	56
☉ Q ♄	29	15	23

SEPTEMBER—*concld.*	d	h	m
☽ ✶ ♄	29	20	00
☽ ☍ ♀ 4°·4S	29	21	07
☽ □ ♇	29	24	12
☽ ☍ ☿ 6°·2S	30	07	35
☉ 160 ♆	30	11	06
☽ ☌ ♅	30	24	29
October			
♀ □ ♇	1	09	43
☽ △ ♌	1	13	18
☽ ✶ ♑	1	14	19
♂ 80 ♄	1	16	20
☽ △ ♆	1	18	48
☽ ✶ ♇	1	25	18
☽ ✶ ♂	2	15	23
☿ ⚺ ♂	2	21	20
♀ 3°·1N *Spica*	3	06	27
☽ ✶ ☉	3	10	16
☿ Apogee	3	11	42
♇ Direct	3	12	09
☿ p ♅	3	22	32
☽ □ ♆	3	22	49
☿ 80 ♇	3	24	25
☽ ☍ ♄ 1°·9S	3	26	10
♀ 80 ♑	3	28	51
☽ ✶ ♀	4	13	10
☿ ☐ ♆	4	18	03
☽ □ ♂	4	24	00
☿ Q ♑	4	26	02
☽ ✶ ☿	4	27	25
☽ △ ♅	5	09	40
☽ □ ☉	5	22	22
☽ ☌ ♌	5	24	22
☽ ☍ ♑ 0°·3N			
Occultation	5	26	10
☽ M.Dec.22°S47'	5	27	02
☽ ✶ ♆ ♋	6	06	58
☿ ∠ ♄	6	08	47
☉ □ ♌	6	23	54
☽ □ ♀	6	28	47
☿ ☌ ♅	7	11	52
☽ △ ♂	7	13	16
Helio ☿ ☍ ♄	*7*	*15*	*39*
☽ □ ♅	7	20	03
☽ □ ☿	7	21	09
☉ □ ♑	7	24	32
☉ V ♆	7	29	29
☽ △ ☉	8	14	51

OCTOBER—*contd.*	d	h	m
☽ ✶ ♄	8	23	57
☉ 160 ♅	8	28	44
♂ 80 ♋	9	05	30
♀ 80 ♇	9	11	01
♆ P ☉	9	19	03
☿ Q ♇	9	21	18
☽ △ ♀	9	24	18
♀ ☐ ♆	9	28	14
☽ ✶ ♅	10	08	24
☉ 150 ♆	10	09	02
☿ 40 ♄	10	14	19
☽ △ ☿	10	17	17
♀ Q ♑	10	19	18
☽ V ☉	10	23	39
☽ △ ♌	10	23	40
☽ Apogee	10	23	59
☽ ✶ ♑	10	26	37
☽ ☍ ♆ 3°·7N	10	28	11
☽ □ ♄	11	13	31
☽ ✶ ♇	11	15	24
☽ p ☉	11	20	13
♂ 150 ♅	12	13	42
☽ ☌ ♂	12	21	12
☿ △ ♌	12	21	25
♀ ∠ ♄	12	21	45
♀ p ♅	12	26	26
♀ ☌ ♅	12	27	38
☽ Equat N ♋	13	09	32
☽ □ ♌	13	10	55
☽ □ ♑	13	15	04
♀ ⚺ ♂	13	19	30
Helio ⊕ □ ♑	*13*	*23*	*41*
☽ △ ♄	13	26	25
☽ ☌ ☉	13	26	37
☽ □ ♇	13	27	29
☉ ✶ ♄	13	27	37
♂ 160 ♆	14	09	42
♄ ☐ ♅	14	11	30
☿ ✶ ♑	14	12	27
☉ □ ♇	14	13	14
Helio ☿ ☍ ♑	*14*	*24*	*56*
☽ ☍ ♅ 4°·4N	14	29	08
Helio ⊕ □ ☿	*15*	*11*	*42*
☽ ☌ ♀	15	14	01
☽ ✶ ♌	15	20	55
♀ Q ♇	15	22	02
☽ △ ♑	15	26	13
☿ △ ♆	15	28	09

October—*contd.*

	d	h	m
☽ ✶ ♆	16	05	33
☽ ☌ ☿	16	06	02
☽ △ ♇	16	14	05
♄ ☌ ♇	17	10	18
☿ 40 ♄	17	13	00
♂ ☍ ♄	17	24	21
☽ △ ♂	17	24	40
☿ △ ♋	17	28	19
☉ 80 ♑	18	13	30
☽ □ ♆	18	14	51
☿ 40 ♂	18	18	30
☽ ☌ ♄	18	23	25
☽ △ ☉	19	07	43
☽ ✶ ♅	19	25	14
☿ ✶ ♇	19	27	54
☿ Gt.Elong 24°E06'	20	09	32
☽ □ ♂ ♋	20	11	02
☽ ☍ ♋	20	12	58
☿ ☌ ♄	20	17	00
☽ △ ☿	20	18	52
☽ ☌ ♑	20	18	56
☽M.Dec. 22°N57'	20	19	08
☿ ✶ ♑	20	19	30
☽ △ ♆	20	21	44
☽ ☌ ♇	21	05	37
☽ △ ☿	21	07	34
♄ 160 ♋	21	16	25
☽ □ ☉	21	18	05
☿ △ ♆	21	25	05
♂ □ ♋	21	25	48
☽ □ ♅	22	06	26
☽ ✶ ♂	22	18	23
☽ □ ☿	22	28	22
☽ △ ♄	23	11	08
☽ □ ☿	23	14	40
☿ □ Node S	23	17	50
☽ v ☉	23	24	49
☽ ✶ ☉	23	25	06
☽ △ ♅	24	08	52
☉ 80 ♇	24	16	42
☽ ✶ ♋	24	19	29
☿ 160 ♅	24	19	35
☽ △ ♑	24	25	34
☽ ☌ ♆	24	27	36
☉ □ ♆	24	28	42
☿ Node S	25	07	59
☽ ✶ ☿	25	10	31

October—*concld.*

	d	h	m
☽ △ ♇	25	10	54
☽ □ ♄	25	13	05
☿ ✶ ♇	25	15	14
☽ ✶ ☿	25	18	27
☽ Perigee	26	16	09
☿ □ ♋	26	16	42
☽ □ ♋	26	19	26
☽ Equat S	26	20	37
☿ ☌ ♄	26	22	16
☽ ☍ ♂ 4°·5S	26	25	18
☉ ☐ ♑	26	25	39
☽ □ ♑	26	26	02
♂ 160 ♅	26	26	04
♅ p ☉	26	28	20
♂ V ♆ ♋	27	06	13
☽ □ ♇	27	11	09
☽ ✶ ♄	27	13	54
♂ □ ♑	27	19	54
☽ ☍ ☉ N.M.	28	09	08
☽ ☌ ♅	28	09	29
☉ ☌ ♅	28	13	45
☿ 160 ♅	28	17	39
☽ △ ♋	28	19	21
☽ ✶ ♑	28	26	51
☽ △ ♆	28	28	23
☽ P ☉	29	06	57
♂ 150 ♆	29	09	42
☿ □ ♋	29	11	56
☽ ✶ ♇	29	12	06
☽ ☍ ☿ 3°·9S	29	20	44
☽ ☍ ☿ 6°·7S	29	23	04
☿ 40 ♂	30	15	30
Helio ☿ ☍ ♆	*30*	*20*	*59*
☿ ☍ ☿ 2°·7S	30	27	36
☿ 40 ♂	31	14	58
☽ ☍ ♄ 1°·3S	31	20	00
☿ Retrograde	31	21	01

November

☉ ∠ ♄	1	08	00
☽ △ ♅	1	16	22
☉ ☐ ♇	1	19	20
♂ p ♆	1	19	53
☽ ✶ ☉	1	24	56
☽ ☌ ♋	1	27	12
☿ ∠ ♑	2	11	55
☽M.Dec. 23°S02'	2	12	34

November—*contd.*

	d	h	m
☽ ☍ ♑ 0°·6N			
Occultation	2	12	59
☽ ✶ ♆	2	14	09
☽ □ ☍	2	19	46
☉ △ ♋ ♋	3	06	43
Helio ☿ ☍ ♄	*3*	*09*	*13*
☽ ✶ ☿	3	11	17
☽ ✶ ☿	3	21	17
☽ □ ♅	3	25	23
Helio ☿ ☌ ☍	*4*	*09*	*22*
☽ □ ☉	4	15	56
☿ P ☿	4	23	48
☽ V ☉	4	28	04
☽ △ ♂	5	09	59
☿ 150 ♅	5	12	40
♂ □ ♇	5	15	58
☽ ✶ ♄	5	17	00
☽ □ ☿	5	20	07
☿ □ ♋	6	10	41
☽ ✶ ♅	6	13	14
☽ □ ☿	6	16	12
☿ 40 ♑	6	18	32
☿ ∠ ♇	6	20	18
☽ △ ♋	6	25	22
☿ ☌ ♄	7	06	09
☽ △ ☉	7	09	55
☽ ☍ ♆ 3°·9N	7	10	06
☽ ✶ ♑	7	12	48
☉ 40 ♄	7	13	00
☿ 160 ♅	7	13	54
☽ Apogee	7	14	06
☽ ✶ ♇	7	23	01
☿ ∠ ♂	7	26	50
☽ △ ♋	7	28	21
Helio ☿ ☍ ♅	*8*	*06*	*40*
☽ □ ♄	8	06	42
☿ ☌ ♂	8	17	56
♂ 3°·6N *Spica*	8	20	08
☉ ✶ ♑	8	22	39
☿ P ♑	8	23	05
☉ △ ♆	8	23	30
♑ ✶ ♆	9	09	30
☽ △ ☿	9	11	43
☽ □ ♋	9	13	11
☿ 3°·9N *Antares*	9	16	06
☽ Equat N	9	16	58

NOVEMBER—*contd.*	d	h	m
☿150☊	9	24	21
☽□♄	9	25	24
☿V ♇	9	27	35
☿ ✶ ♇ ♋	10	07	36
☽ □ ♇	10	11	06
☽ ☌ ♂	10	17	26
☽ △ ♃	10	19	28
☿40 ♇	10	22	16
☽ ♂ ♅ 4°·4N	11	09	45
☿ Node N	11	19	24
☿ P ☉	11	20	23
☉ ☌ ☿ Inf.	11	20	52
☽ ✶ ☊	11	23	16
☽ ✶ ♆	12	11	40
☽ △ ♄	12	12	11
☽ ☌ ☿	12	15	19
☽ ☌ ☉ F.M.	12	19	02
☿ P ♃	12	20	46
☽ △ ♇	12	21	15
♂ ✶ ♃	12	24	53
☿ ✶ ♄	13	20	23
☿V ♄	13	20	29
☽ p ☉	13	22	10
☉ ✶ ♇	13	23	24
♂80 ♄	13	25	58
☿ △ ♆	13	28	12
☿40 ♃	13	28	40
♃80 ♆	14	09	12
☿ V ☿	14	13	47
☽ ☌ ☿	14	19	43
☽ □ ♆	14	20	00
☿ □ ♆	14	22	28
☿ V ♄	15	08	59
Helio ☿ ☌ ♄	*15*	*11*	*08*
☽ ☌ ♃	15	14	52
☽ △ ♂	15	17	07
☽ ✶ ♅	15	28	46
☿ Perigee	16	11	19
☽ ☌ ☊	16	14	18
☉160 ♅	16	18	04
☽ △ ☿	16	21	37
☉ ☐ ☊	16	25	30
☽ M.Dec. 23°N09'	16	25	55
☽ △ ♆	16	26	30
☽ ☌ ♄	16	27	47
☿ ☐ ♅	17	05	49

NOVEMBER—*contd.*	d	h	m
☽ ☌ ♇	17	11	17
☿160 ☊	17	12	05
☽ △ ☉	17	18	20
☽ □ ♂	17	25	43
☽ □ ♅	18	10	03
☽ v ☉	18	11	12
☿ V ♇	18	14	44
Helio ☿ ☌ ♃	*18*	*20*	*06*
☽ □ ☿	18	24	24
☿ ∠ ♃	18	25	48
☿40 ☿	19	15	12
☿ v ☊	19	15	24
☽ △ ☿	19	17	32
☉ V ♃	19	25	30
☽ △ ♃	19	26	35
☽ □ ☉	19	26	39
☽ ✶ ♂	20	08	17
☽ △ ♅	20	13	40
☽ ✶ ☊	20	22	57
♂ ☐ ♆	20	23	30
☿ Direct	20	24	54
☽ ✶ ☿	20	27	02
♂80 ♇	21	09	17
☽ ☌ ♆	21	10	19
☽ △ ♄	21	12	11
☽ △ ♇	21	19	10
Helio ☿ ☌ ♄	*21*	*21*	*35*
☽ □ ☿	21	25	08
☽ □ ♃	22	05	55
☽ ✶ ☉	22	09	00
☿80 ♆	22	23	20
☽ □ ☊	22	24	53
☽ Equat S	23	05	46
☽ Perigee	23	13	11
☽ □ ♄	23	14	23
☽ □ ♇	23	21	02
Helio ☿ ☌ ☿	*23*	*24*	*39*
☿ ∠ ☿	23	28	29
☽ ✶ ☿ ♋	24	07	30
☽ ✶ ♃	24	08	20
☽ ☌ ♂ 4°·3S	24	17	06
☽ ☌ ♅	24	17	23
☿ ☌ ♃ 1°·4S	24	19	04
♂ ☌ ♅	24	22	29
☽ △ ☊	24	26	14
☉ ∠ ♄	25	05	30

NOVEMBER—*concld.*	d	h	m
☽ ☌ ☿ 1°·9S	25	09	19
☽ △ ♆	25	14	00
♂ p ♅	25	14	03
☽ ✶ ♄	25	16	32
☿ ∠ ♃	25	16	42
☽ ✶ ♇	25	23	02
☉150 ♅	26	07	24
☿ □ Node N	26	16	30
☽ ☌ ☉ N.M.	26	20	36
☽ □ ♆	27	17	13
♆ Direct	27	18	03
☽ p ☉	27	23	01
☿V ♃	27	23	08
♂ ☿ ♄	27	28	05
☿ △ ♆	28	12	13
☿ Gt.Elong 20°W01'	28	15	59
☽ ☌ ♃ 0°·7S	28	16	20
☿ △ ♅	28	23	53
☿ Apogee	28	23	58
☽ ☌ ☿ 1°·9S			
Occultation	28	24	13
☽ △ ♅	28	24	15
☉ V ♂	28	24	56
☉ ∠ ♇	28	28	17
☽ ✶ ♂	29	05	36
☽ ☌ ☊	29	09	47
☿ ☐ ♆	29	10	02
☽ M.Dec.23°S12'	29	22	35
☽ ✶ ♆	29	23	13
☽ ✶ ☿	29	26	03
☽ ☌ ♄ 0°·9N			
Occultation	29	26	47
☽ V ☉	30	11	08
☿ ✶ ♄	30	11	36
Helio ⊕ □ ☿	*30*	*11*	*59*
☉40 ♄	30	16	25

December

☽ □ ♅ ♋	1	08	09
☉150 ☊	1	10	23
☽ □ ♂	1	17	18
☽ ✶ ☉	1	19	18
☉ V ♇	2	06	38
Helio ☿ ☌ ♆	*2*	*17*	*15*
☽ □ ☿	2	18	02
♂ △ ☊	2	18	08

DECEMBER—*contd.*	d	h	m
☾☌♇	3	07	07
☿✶♇	3	10	52
☽✶♄	3	12	57
☽✶♅	3	19	15
♂Q♇	3	21	11
☾✶♂	3	21	16
♄ P ☉	3	23	37
☉40 ♇	4	05	54
☽△♋	4	06	16
☽△♂	4	08	21
☽✶☾	4	08	58
☽□☉	4	12	28
☽♂♆ 4°·1N	4	17	37
☿160 ♅	4	18	23
☽✶♄	4	25	44
☿☊♋	4	27	42
☉V ♄	5	07	16
☽✶♇	5	08	10
☽ Apogee	5	09	38
☽△☿	5	13	45
☽□♐	5	26	39
☽□♋	6	18	42
☽ Equat N	6	25	43
☽□☾	6	28	27
☽△☉	7	06	35
☽□♄	7	14	33
☽□♇	7	20	28
♐△♅ ♋	8	05	39
♐☌♋	8	06	06
☾☌♐	8	11	55
☉□♆	8	14	33
☉V ♐	8	15	33
☽♂♅ 4°·6N	8	16	01
☉V ☾	8	16	51
♐△♆	8	23	39
☾✶♆	8	27	14
♐Q♄	8	27	20
♂☌♐	8	28	02
☉✶♐	8	28	19
♐80 ♇	8	29	24
☽✶♋	9	05	38
☿☌♐	9	05	39
☽☌♂	9	14	37
☽△♐	9	18	29
☽✶♆	9	19	47
☽△☾	9	21	34

DECEMBER—*contd.*	d	h	m
☽△♄	9	25	22
☽△♇	10	06	41
Helio ⊕□♆	*10*	*11*	*23*
☉□♅	10	16	20
☉160 ♋	10	25	45
☽☌☿	10	26	12
☉☌☾	11	14	04
☾♂♄ 1°·8S	11	15	35
☉☌♄	11	15	58
☿150 ♅	11	17	22
☽□♆	11	27	40
Helio ☿♂♂	*12*	*10*	*07*
☽☌☉F.M.	12	10	39
☿∠♄	12	11	39
☽☌♐	13	09	02
☽✶♅	13	10	12
♂△♆	13	17	30
☽♂♋	13	19	45
☽V ☉	13	20	17
♐P ☉	13	29	29
☽P ☉	14	05	45
☿∠♇	14	06	35
☉☌♇	14	08	45
☽ M.Dec. 23°N14'	14	08	59
☽△♆	14	09	06
☽△♂	14	09	41
☽☌♄	14	15	00
☽☌♇	14	19	15
☽☌☾	14	21	24
☾P ☉	14	21	29
☿V ☾	14	23	11
☉ v ♋	14	27	31
Helio ☿☌♅ ♋	*15*	*07*	*25*
☿150 ♋	15	08	12
☽□♅	15	14	30
☿V ♇	15	20	06
☿ 5°·1N *Antares*	15	21	41
♐△♅	15	24	42
☽△☿	15	25	46
☿40 ♄	15	26	37
☿∠☾	15	28	00
☽□♂	16	16	15
♂∠♐	16	23	02
☽△☉	16	27	40
☿V ♄	17	06	43
☿P ♇	17	15	35

DECEMBER—*contd.*	d	h	m
☿40 ♇	17	16	08
☽△♅	17	17	41
☽△♐	17	18	26
☽✶♋	17	27	07
☽□☿	18	11	00
☉80 ♆	18	12	42
☽☌♆	18	15	59
☽✶♂	18	21	44
☽△♄	18	22	26
☿P☾	18	23	29
☽Perigee	18	25	55
☽△♇	18	25	58
☾160 ♋	19	06	09
☽□☉	19	10	27
☽△☾	19	13	37
♂✶♄	19	15	41
☽□♐	19	22	04
☿ Node S	19	26	18
☽□♋	20	05	54
☿□♆	20	09	46
☽ Equat S	20	12	21
☾P♄	20	18	17
☽✶☿	20	19	52
♐Q♆	20	23	58
☽□♄	20	25	38
☾□Node S	20	27	04
☽□♇	20	28	54
☾∠♆	21	09	27
☿☊♅	21	13	30
☽✶☉	21	17	17
☽□☾	21	21	23
☿160 ♋	21	22	47
☽☌♅	21	23	17
☽✶♐	21	25	52
☽△♋ ♋	22	08	52
☉ Enters ♈			
Winter Solstice	22	09	49
☿·P♐	22	10	17
☾□♅	22	18	56
♂✶♇	22	20	02
☽△♆	22	22	03
☿P ☉	22	27	46
☿∠♄	22	28	56
☽✶♄	22	29	21
☽✶♇	23	08	22
☽♂♂ 3°·5S	23	08	57

DECEMBER—*contd.*	d	h	m
♂160 ♅	23	21	30
☽ ✶ ♀	24	06	09
☿ ⩛ ♇	24	08	40
♀ ⩛ ♃	24	11	30
☿ v ☊	24	16	11
♂ □ ☊	24	18	58
♀ ☌ ♂	24	23	51
☽ □ ♆	24	26	26
☉ △ ♅	24	27	11
☿ ⩛ ♂	25	11	23
♀40 ♆	25	12	05
☽ ☍ ☿ 1°·9S	25	16	48
☽ V ☉	25	20	57
♀ V ♂	25	24	41
☽ △ ♅	26	08	17

DECEMBER—*contd.*	d	h	m
☽ ☍ ☉ N.M.	26	10	43
Annular Solar Eclipse			
☉ ☌ ♆	26	11	54
☽ ☍ ♃ 0°·2S	26	12	59
☿ V ♃	26	15	00
☽ ☍ ☊	26	18	35
☾ Perigee	26	22	24
☿ 80 ♆	26	23	14
☉ V ☿	26	25	08
☽ M.Dec.23°S14'	27	07	09
☾ 150 ☊	27	07	46
☽ ✶ ♆	27	08	56
☉40 ♂	27	13	30
☽ ☍ ♄ 1°·2N	27	17	38
☉ ☍ ♃	27	23	55

DECEMBER—*concld.*	d	h	m
☽ ✶ ♂	27	26	34
♂ 40 ♃	28	08	16
☽ □ ♅	28	16	06
☽ ☍ ☾ 1°·0N ♋			
Occultation	29	07	37
☿ Apogee	30	10	58
☉ ☌ ☊	30	15	20
☽ □ ♂	30	15	57
☾80 ♅	30	20	06
☽ ✶ ☿	30	25	40
☽ ✶ ♅	30	26	36
☿ △ ♅	30	28	43
☽ □ ☊	31	12	38
☽ ☍ ♆ 4°·1N	31	26	30

Note— The 'Nonile' aspect which are formed at distances of 40° (1st nonile), 80° (2nd nonile), 120° (3rd nonile or trine) and 160° (4th nonile) are on the basis of one-ninth division of the circle of twelve *navamshas*. When two planets form the 'Nonile' aspect, they are in true conjunction in the *navamsha* chart.

The V-aspects of the Sun and the Moon, used by the ancient Indian astronomers, are of two kinds *viz.* the ***Vyatipata*** aspect when the sum of the tropical longitudes of the Sun and the Moon amounted to 180° (symbol—V), and the ***Vaidhriti*** aspect when it amounted to 360° (symbol—v). These aspects mutually between all other planets also have been shown. These two V-aspects like conjunctions and oppositions have a very close of affinity with the parallel aspects, and latter generally taking place very near to the former four.

The ***heliocentric aspects*** are with reference to the places of planets as may be seen by an observer stationed in the Sun. Of these aspects, the conjunctions and oppositions are the most important. When two planets form the opposition aspect heliocentrically, both the planets are at that time invisible to each other having been intervened by the Sun situated between them. In case of conjunctions, the outer planets is visible to the inner one, but the inner planet is not visible to the outer. This phenomena is similar to combustion or heliacal setting of planets as we see from the planet Earth.

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ECLIPSES, 2019

In the year 2019, there are five eclipses, three of the Sun and two of the Moon. Details of the eclipses are given below in I. S. T.

	Partial Solar Eclipse	Total Lunar Eclipse	Total Solar Eclipse	Partial Lunar Eclipse	Annular Solar Eclipse
	Jan. 5-6 Sat.-Sun.	Jan. 21 Monday	Jul. 2 Tuesday	Jul. 16 Tuesday	Dec. 26 Thursday
	h *m*	*h* *m*	*h* *m*	*h* *m*	*h* *m*
Eclipse begins	29 04	09 04	22 25	25 31	08 00
Totality or Annularity begins	—	10 11	23 32	—	09 06
Maximum of Eclipse (Central Eclipse at local apparent noon)	07 12	10 42	24 53	27 01	10 48
Totality or Annularity ends	—	11 14	26 14	—	12 29
Eclipse ends	9 19	12 21	27 21	28 30	13 36
Moon enters penumbra	—	08 05	—	24 12	—
Moon leaves penumbra	—	13 20	—	05 49	—
New Moon or Full Moon	6 58 N.M.	10 36 F.M.	24 46 N.M.	27 08 F.M.	10 43 N.M.
Moon's Latitude	+0° 12'	+1° 31'	−2° 14'	+1° 08'	+1° 13'
Moon's Longitude	8^s 21° 18'	3^s06°39'	2^s16°31'	8^s29°50'	8^s09°58'
Moon – *Rahu* (Asc. Node)	162° 42'	3° 59'	6° 59'	95° 18'	175° 43'
Total duration	4^h 15^m	3^h 17^m	4^h 56^m	2^h 59^m	5^h 36^m
Magnitude	0.714	1.201	1.045	0.658	0.969
Conjunction or Opposition in R.A.	7^h 04^m	10^h 38^m	24^h 52^m	26^h 55^m	10^h 45^m
Visibility in India	Not Visible	NotVisible	NotVisible	Visible	Visible

N.B.— Times of beginning and ending of eclipses as shown above relate to the Earth as a whole and not to any particular locality.

AREA OF VISIBILITY OF ECLIPSES

1. **Partial Solar Eclipse, January 5-6, Saturday– Sunday :** The Eclipse is visible in the region covering north eastern china, Mongolia, Japan, Eastern Russia, North and Westernmost Alaska. The Eclipse will not be visible in India.
2. **Total Lunar Eclipse, January 21, Monday :** The Eclipse is visible in the region covering Middle East, Africa, Europe, America, most of Oceania, easternmost part of Russia. The Eclipse will not be visible in India.
3. **Total Solar Eclipse, July 2, Tuesday :** The Eclipse is visible in the region covering South America, South central America and the South Pacific occean. The Eclipse will not be visible in India.
4. **Partial Lunar Eclipse, July 16, Tuesday :** The Eclipse is visible in the region covering Australasia, Asia except northeast, Africa, Europe, except northern most Scandinavia, most of South America.The Eclipse will be visible from beginning to end from all places of India, except extreme north east part of Arunachal Pradesh.
5. **Annular Solar Eclipse, December 26, Thursday :** The Eclipse is visible in the region covering Middle East, north eastern Africa, Asia except north and eastern Russia, north and western Australia, Solomon Island. The Eclipse will be visible in India.

ANNULAR SOLAR ECLIPSE, DECEMBER 26, 2019
LOCAL CIRCUMSTANCES OF THE PARTIAL PHASE RELATING TO CERTAIN PLACES IN INDIA

Places	Partial Eclipse Begins (I.S.T.)		Greatest Eclipse (I.S.T.)		Magnitude	Partial Eclipse Ends (I.S.T.)	
	h	*m*	*h*	*m*		*h*	*m*
Agartala	8	35	10	01	0.499	11	39
Ahmedabad	8	06	9	22	0.743	10	52
Aizwal	8	39	10	05	0.488	11	44
Ajmer	8	11	9	26	0.636	10	54
Allahabad	8	19	9	38	0.570	11	10
Amritsar	8	19	9	29	0.516	10	50
Beangalluru	8	07	9	30	0.930	11	11
Bhagalpur	8	28	9	49	0.514	11	24
Bhopal	8	11	9	29	0.676	11	02
Bhubaneswar	8	20	9	46	0.640	11	28
Chandigarh	8	22	9	33	0.494	10	55
Chennai	8	09	9	35	0.892	11	19
Cochin	8	06	9	29	0.941	11	09
Cooch Behar	8	35	9	56	0.464	11	29
Cuttack	8	20	9	46	0.634	11	28
Darjeeling	8	33	9	53	0.461	11	25
Dehradun	8	21	9	33	0.507	10	57
Delhi	8	17	9	31	0.555	10	57
Dibrugarh	8	51	10	13	0.391	11	43
Dwarka	8	04	9	18	0.808	10	45
Gandhinagar	8	07	9	22	0.738	10	52
Gangtok	8	35	9	54	0.452	11	25
Gaya	8	24	9	45	0.548	11	19
Guwahati	8	40	10	02	0.448	11	36
Hardwar	8	21	9	34	0.500	10	57
Hazaribagh	8	23	9	45	0.560	11	22
Hubli	8	05	9	25	0.882	11	03
Hyderabad	8	08	9	31	0.803	11	10
Imphal	8	43	10	09	0.458	11	45
Itanagar	8	46	10	08	0.410	11	40
Jaipur	8	13	9	28	0.613	10	56
Jalandhar	8	21	9	31	0.494	10	52
Jammu	8	21	9	30	0.494	10	49
Kanyakumari	8	08	9	32	0.910	11	14
Kavalur	8	08	9	33	0.904	11	17
Kavaratti	8	04	9	23	0.919	10	59
Kohima	8	45	10	10	0.435	11	44
Kolhapur	8	04	9	24	0.881	11	00

ANNULAR SOLAR ECLIPSE, DECEMBER 26, 2019
LOCAL CIRCUMSTANCES OF THE PARTIAL PHASE RELATING TO CERTAIN PLACES IN INDIA

Places	Partial Eclipse Begins (I.S.T.)		Greatest Eclipse (I.S.T.)		Magnitude	Partial Eclipse Ends (I.S.T.)	
	h	*m*	*h*	*m*		*h*	*m*
Kolkata	8	27	9	53	0.559	11	32
Koraput	8	14	9	39	0.713	11	21
Kurnool	8	07	9	30	0.850	11	11
Lucknow	8	20	9	37	0.548	11	07
Midnapore	8	25	9	50	0.573	11	30
Mount Abu	8	08	9	23	0.705	10	51
Mumbai	8	04	9	22	0.845	10	55
Murshidabad	8	30	9	53	0.517	11	30
Muzaffarpur	8	26	9	46	0.512	11	19
Mysore	8	06	9	28	0.959	11	09
Nagpur	8	11	9	32	0.704	11	09
Nalgonda	8	09	9	32	0.804	11	13
Nasik	8	05	9	23	0.804	10	57
Nellore	8	09	9	34	0.858	11	17
Panaji	8	04	9	24	0.902	11	01
Patna	8	25	9	45	0.527	11	19
Pondicherry	8	09	9	34	0.925	11	19
Port Blair	8	28	10	08	0.771	12	04
Puri	8	20	9	46	0.651	11	29
Pune	8	05	9	23	0.840	10	58
Raipur	8	14	9	37	0.669	11	15
Rajahmundry	8	12	9	38	0.763	11	22
Rajkot	8	05	9	20	0.787	10	49
Ranchi	8	22	9	45	0.576	11	23
Sambalpur	8	18	9	42	0.635	11	21
Shillong	8	39	10	03	0.457	11	38
Shimla	8	21	9	32	0.500	10	55
Sibsagar	8	49	10	12	0.404	11	43
Silchar	8	40	10	06	0.466	11	42
Siliguri	8	33	9	53	0.468	11	26
Silvassa	8	05	9	22	0.803	10	54
Sringeri	8	23	9	31	0.464	10	48
Thiruvanant-apuram	8	07	9	30	0.912	11	12
Udaipur	8	09	9	24	0.692	10	53
Ujjain	8	09	9	27	0.699	10	59
Vadodara	8	06	9	23	0.753	10	54
Varanasi	8	21	9	40	0.558	11	14
Vijayawada	8	10	9	35	0.798	11	17

ANNULAR SOLAR ECLIPSE, DECEMBER 26, 2019
LOCAL CIRCUMSTANCES RELATING TO CERTAIN PLACES IN INDIA FROM WHERE ANNULAR PHASE IS VISIBLE

Places	Partial Eclipse Begins (I.S.T.)	Annular Eclipse Begins (I.S.T.)	Greatest Eclipse (I.S.T.)	Magnitude	Annular Eclipse Begins (I.S.T.)	Partial Eclipse Ends (I.S.T.)	Duration of Annularity
	h *m*	*h* *m*	*h* *m*		*h* *m*	*h* *m*	*m* *s*
Cannanore	8 05.0	9 24.8	9 26.3	0.967	9 27.8	11 05.3	2 59
Kozikode	8 05.4	9 26.5	9 27.2	0.968	9 27.9	11 06.9	1 28
Madurai	8 07.5	9 31.5	9 31.8	0.967	9 32.1	11 14.7	0 36
Mangalore	8 04.6	9 24.3	9 25.3	0.969	9 26.3	11 03.5	2 01
Trichur	8 06.0	9 28.3	9 28.4	0.966	9 28.5	11 09.0	0 12

TRANSIT OF MERCURY OVER THE DISC OF THE SUN : NOVEMBER 11, 2019

Circumstances of the Transit			
	Indian Standard Time		
	d	*h*	*m*
Ingress, exterior contact	11	18	05
Ingress, interior contact	11	18	07
Egress, interior contact	11	23	33
Egress, exterior contact	11	23	34

Note : The Phenomenon just starts at few places of very extreme western part of Gujarat like Dwarka, Porbandar etc. at the time of sunset of those places.

AYANAMSA CORRECTION

(Correction for precession *i.e.* for yearly variation of *ayanamsa*)

The corrections are for the middle of the year.

After obtaining from the tables the exact value of the Ascendant or the Tenth house (in degrees and mins.) for the given time and place, the following correction for the year in question should be applied to the result.

Year	Correction	Year	Correction	Year	Correction	Year	Correction	Year	Correction
A.D.	° '	A.D.	° '	A.D.	° '	A.D.	° '	A.D.	° '
1000	+ 13 4	1821	+ 1 38	1877	+ 0 51	1933	+ 0 4	1989	− 0 43
1100	11 41	1822	1 37	1878	0 50	1934	0 3	1990	0 44
1200	10 17	1823	1 36	1879	0 49	1935	0 3	1991	0 44
1300	8 54	1824	1 35	1880	0 49	1936	0 2	1992	0 45
1350	8 12	1825	1 35	1881	0 48	1937	+ 0 1	1993	0 46
1400	7 30	1826	1 34	1882	0 47	1938	0 0	1994	0 47
1420	7 13	1827	1 33	1883	0 46	1939	− 0 1	1995	0 48
1440	6 57	1828	1 32	1884	0 45	1940	0 2	1996	0 49
1460	6 40	1829	1 31	1885	0 44	1941	0 2	1997	0 49
1480	6 23	1830	1 30	1886	0 44	1942	0 3	1998	0 50
1500	6 7	1831	1 30	1887	0 43	1943	0 4	1999	0 51
1520	5 50	1832	1 29	1888	0 42	1944	0 5	2000	0 52
1540	5 33	1833	1 28	1889	0 41	1945	0 6	2001	0 53
1560	5 16	1834	1 27	1890	0 40	1946	0 7	2002	0 54
1580	5 0	1835	1 26	1891	0 39	1947	0 8	2003	0 55
1600	4 43	1836	1 25	1892	0 39	1948	0 8	2004	0 55
1610	+ 4 35	1837	+ 1 25	1893	+ 0 38	1949	− 0 9	2005	− 0 56
1620	4 26	1838	1 24	1894	0 37	1950	0 10	2006	0 57
1630	4 18	1839	1 23	1895	0 36	1951	0 11	2007	0 58
1640	4 19	1840	1 22	1896	0 35	1952	0 12	2008	0 59
1650	4 1	1841	1 21	1897	0 34	1953	0 13	2009	1 00
1660	3 53	1842	1 20	1898	0 33	1954	0 13	2010	1 1
1670	3 44	1843	1 20	1899	0 33	1955	0 14	2011	1 1
1680	3 36	1844	1 19	1900	0 32	1956	0 15	2012	1 2
1690	3 28	1845	1 18	1901	0 31	1957	0 16	2013	1 3
1700	3 19	1846	1 17	1902	0 30	1958	0 17	2014	1 4
1710	3 11	1847	1 16	1903	0 29	1959	0 18	2015	1 5
1720	3 3	1848	1 15	1904	0 29	1960	0 18	2016	1 6
1730	2 54	1849	1 15	1905	0 28	1961	0 19	2017	1 6
1740	2 46	1850	1 14	1906	0 27	1962	0 20	2018	1 7
1750	2 37	1851	1 13	1907	0 26	1963	0 21	2019	1 8
1760	2 29	1852	1 12	1908	0 25	1964	0 22	2020	1 9
1770	2 21	1853	1 11	1909	0 24	1965	0 23	2021	1 10
1780	2 12	1854	1 10	1910	0 23	1966	0 23	2022	1 11
1790	2 4	1855	1 10	1911	0 23	1967	0 24	2023	1 11
1800	1 56	1856	1 9	1912	0 22	1968	0 25	2024	1 12
1801	+ 1 55	1857	+ 1 8	1913	+ 0 21	1969	− 0 26	2025	− 1 13
1802	1 54	1858	1 7	1914	0 20	1970	0 27	2026	1 14
1803	1 53	1859	1 6	1915	0 19	1971	0 28	2027	1 15
1804	1 52	1860	1 5	1916	0 18	1972	0 28	2028	1 15
1805	1 51	1861	1 5	1917	0 18	1973	0 29	2029	1 16
1806	1 51	1862	1 4	1918	0 17	1974	0 30	2030	1 17
1807	1 50	1863	1 3	1919	0 16	1975	0 31	2031	1 18
1808	1 49	1864	1 2	1920	0 15	1976	0 32	2032	1 19
1809	1 48	1865	1 1	1921	0 14	1977	0 33	2033	1 19
1810	1 47	1866	1 0	1922	0 13	1978	0 33	2034	1 20
1811	1 46	1867	0 59	1923	0 13	1979	0 34	2035	1 21
1812	1 46	1868	0 59	1924	0 12	1980	0 35	2036	1 22
1813	1 45	1869	0 58	1925	0 11	1981	0 36	2037	1 23
1814	1 44	1870	0 57	1926	0 10	1982	0 37	2038	1 23
1815	1 43	1871	0 56	1927	0 9	1983	0 38	2039	1 24
1816	1 42	1872	0 55	1928	0 8	1984	0 39	2040	1 25
1817	1 41	1873	0 54	1929	0 8	1985	0 39	2041	1 26
1818	1 41	1874	0 54	1930	0 7	1986	0 40	2042	1 27
1819	1 40	1875	0 53	1931	0 6	1987	0 41	2043	1 28
1820	+ 1 39	1876	+ 0 52	1932	+ 0 5	1988	− 0 42	2044	− 1 28

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

The timings of Sunrise and Sunset shown in the following pages relate to the visibility of the upper limb of the Sun on the horizon and include refraction and limb correction amounting to a total of about $3\frac{1}{2}$ mins. (3 mins. for 0° or 10° lat. and 4 mins. for 30° or 35° lat.)

Date	Thiruvananthapuram 8°N 32′ L.M.T.Corr.–22m.0				Port Blair 11°N 40′ L.M.T.Corr.–41m.1				Bangalore 12°N 58′ L.M.T.Corr.–19m.6				Chennai 13°N 04′ L.M.T.Corr.–9m.0				Vijayawada 16°N 32′ L.M.T.Corr.–7m.6				Rājahmundry 17°N 00′ L.M.T.Corr.–2m.9			
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jan. 0	6	37	18	16	5	39	17	07	6	41	18	05	6	31	17	54	6	36	17	47	6	32	17	40
4	6	37	18	16	5	40	17	08	6	43	18	06	6	32	17	56	6	37	17	48	6	33	17	42
8	6	39	18	18	5	42	17	10	6	44	18	08	6	33	17	58	6	38	17	50	6	34	17	45
12	6	40	18	20	5	43	17	12	6	45	18	10	6	35	18	00	6	39	17	53	6	35	17	47
16	6	41	18	22	5	43	17	14	6	46	18	13	6	35	18	02	6	39	17	55	6	35	17	50
20	6	42	18	24	5	44	17	17	6	46	18	15	6	36	18	04	6	40	17	57	6	36	17	52
24	6	42	18	26	5	44	17	18	6	46	18	17	6	36	18	06	6	39	18	00	6	36	17	54
28	6	43	18	27	5	44	17	20	6	46	18	19	6	36	18	08	6	39	18	02	6	35	17	57
Feb. 1	6	43	18	29	5	44	17	22	6	46	18	20	6	35	18	10	6	38	18	04	6	34	17	59
5	6	42	18	30	5	43	17	23	6	45	18	22	6	35	18	12	6	37	18	06	6	33	18	01
9	6	42	18	31	5	43	17	25	6	44	18	23	6	34	18	13	6	36	18	07	6	32	18	02
13	6	41	18	32	5	41	17	26	6	43	18	25	6	32	18	14	6	34	18	09	6	30	18	04
17	6	40	18	32	5	40	17	27	6	41	18	26	6	31	18	15	6	32	18	11	6	28	18	06
21	6	39	18	33	5	39	17	28	6	40	18	27	6	29	18	16	6	30	18	12	6	26	18	07
25	6	37	18	33	5	37	17	28	6	38	18	28	6	27	18	17	6	28	18	13	6	24	18	08
Mar.1	6	36	18	33	5	35	17	29	6	36	18	28	6	25	18	18	6	26	18	14	6	21	18	09
5	6	34	18	33	5	33	17	29	6	33	18	29	6	23	18	18	6	23	18	15	6	19	18	10
9	6	32	18	33	5	31	17	30	6	31	18	29	6	21	18	19	6	20	18	16	6	16	18	11
13	6	30	18	33	5	28	17	30	6	29	18	30	6	18	18	19	6	17	18	17	6	13	18	12
17	6	28	18	33	5	26	17	30	6	26	18	30	6	16	18	20	6	14	18	18	6	10	18	13
21	6	26	18	33	5	23	17	30	6	23	18	30	6	13	18	20	6	11	18	18	6	07	18	14
25	6	24	18	32	5	21	17	30	6	21	18	31	6	10	18	20	6	08	18	19	6	04	18	15
29	6	22	18	32	5	18	17	30	6	18	18	31	6	08	18	20	6	05	18	20	6	01	18	15
Apr.2	6	20	18	32	5	16	17	31	6	15	18	31	6	05	18	21	6	02	18	20	5	57	18	16
6	6	17	18	32	5	13	17	31	6	13	18	31	6	03	18	21	5	59	18	21	5	54	18	17
10	6	15	18	32	5	11	17	31	6	10	18	32	6	00	18	21	5	56	18	22	5	52	18	17
14	6	14	18	31	5	09	17	31	6	08	18	32	5	58	18	22	5	54	18	22	5	49	18	18
18	6	12	18	31	5	06	17	31	6	06	18	32	5	55	18	22	5	51	18	23	5	46	18	19
22	6	10	18	31	5	04	17	32	6	04	18	33	5	53	18	23	5	48	18	24	5	43	18	20
26	6	08	18	32	5	02	17	32	6	02	18	34	5	51	18	23	5	46	18	25	5	41	18	21
30	6	07	18	32	5	01	17	33	6	00	18	34	5	49	18	24	5	44	18	26	5	39	18	22
May4	6	06	18	32	4	59	17	33	5	58	18	35	5	48	18	25	5	42	18	27	5	37	18	23
8	6	05	18	33	4	58	17	34	5	57	18	36	5	46	18	25	5	40	18	28	5	35	18	24
12	6	04	18	33	4	57	17	35	5	55	18	37	5	45	18	26	5	38	18	30	5	33	18	26
16	6	03	18	34	4	56	17	36	5	54	18	38	5	44	18	27	5	37	18	31	5	32	18	27
20	6	03	18	35	4	55	17	37	5	54	18	39	5	43	18	29	5	36	18	32	5	31	18	28
24	6	02	18	35	4	54	17	38	5	53	18	40	5	43	18	30	5	35	18	34	5	30	18	30
28	6	02	18	36	4	54	17	39	5	53	18	41	5	42	18	31	5	35	18	35	5	29	18	31
Jun. 1	6	02	18	37	4	54	17	40	5	53	18	42	5	42	18	32	5	34	18	37	5	29	18	33
5	6	03	18	38	4	54	17	41	5	53	18	44	5	42	18	33	5	34	18	38	5	29	18	34
9	6	03	18	39	4	54	17	42	5	53	18	45	5	43	18	34	5	34	18	39	5	29	18	35
13	6	04	18	40	4	55	17	43	5	53	18	46	5	43	18	36	5	35	18	40	5	29	18	37
17	6	04	18	41	4	56	17	44	5	54	18	47	5	44	18	37	5	35	18	42	5	30	18	38
21	6	05	18	42	4	56	17	45	5	55	18	48	5	44	18	38	5	36	18	43	5	31	18	39
25	6	06	18	43	4	57	17	46	5	56	18	49	5	45	18	38	5	37	18	43	5	31	18	40
29	6	07	18	44	4	58	17	47	5	57	18	49	5	46	18	39	5	38	18	44	5	33	18	40
Jul. 3	6	08	18	44	4	59	17	47	5	58	18	50	5	47	18	40	5	39	18	44	5	34	18	41

N.B.—To obtain the times of Sunrise and Sunset in L. M. T. of the place, apply the correction for L. M. T. as indicated above for each station.

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

Date	Thiruvananthapuram 8°N 32′ L.M.T.Corr.–22m.0				Port Blair 11°N 40′ L.M.T.Corr.–41m.1				Bangalore 12°N 58′ L.M.T.Corr.–19m.6				Chennai 13°N 04′ L.M.T.Corr.–9m.0				Vijayawada 16°N 32′ L.M.T.Corr.–7m.6				Rajahmundry 17°N 00′ L.M.T.Corr.–2m.9			
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jul. 3	6	08	18	44	4	59	17	47	5	58	18	50	5	47	18	40	5	39	18	44	5	34	18	41
7	6	09	18	45	5	01	17	48	5	59	18	50	5	49	18	40	5	40	18	44	5	35	18	41
11	6	10	18	45	5	02	17	48	6	00	18	50	5	50	18	40	5	42	18	44	5	36	18	41
15	6	11	18	45	5	03	17	48	6	01	18	50	5	51	18	40	5	43	18	44	5	38	18	40
19	6	12	18	45	5	04	17	47	6	02	18	50	5	52	18	39	5	44	18	43	5	39	18	40
23	6	12	18	45	5	05	17	47	6	03	18	49	5	53	18	39	5	46	18	42	5	40	18	39
27	6	13	18	44	5	06	17	46	6	04	18	48	5	54	18	38	5	47	18	41	5	41	18	37
31	6	14	18	44	5	06	17	45	6	05	18	47	5	55	18	37	5	48	18	40	5	43	18	36
Aug.4	6	14	18	42	5	07	17	44	6	06	18	46	5	55	18	35	5	49	18	38	5	44	18	34
8	6	14	18	41	5	08	17	42	6	06	18	44	5	56	18	34	5	50	18	36	5	45	18	32
12	6	14	18	40	5	08	17	42	6	07	18	42	5	57	18	32	5	51	18	34	5	46	18	30
16	6	15	18	38	5	08	17	39	6	07	18	40	5	57	18	30	5	52	18	32	5	47	18	28
20	6	14	18	36	5	09	17	37	6	08	18	38	5	58	18	28	5	52	18	29	5	47	18	25
24	6	14	18	35	5	09	17	35	6	08	18	36	5	58	18	25	5	53	18	27	5	48	18	22
28	6	14	18	33	5	09	17	32	6	08	18	33	5	58	18	23	5	54	18	24	5	49	18	20
Sep. 1	6	14	18	30	5	09	17	30	6	08	18	31	5	58	18	20	5	54	18	21	5	49	18	17
5	6	13	18	28	5	09	17	27	6	09	18	28	5	58	18	18	5	55	18	18	5	50	18	13
9	6	13	18	26	5	09	17	25	6	09	18	25	5	58	18	15	5	55	18	15	5	50	18	10
13	6	12	18	24	5	09	17	22	6	09	18	22	5	58	18	12	5	56	18	11	5	51	18	07
17	6	12	18	21	5	09	17	19	6	09	18	20	5	58	18	09	5	56	18	08	5	51	18	04
21	6	11	18	19	5	08	17	16	6	09	18	17	5	58	18	06	5	56	18	05	5	52	18	00
25	6	11	18	17	5	08	17	14	6	09	18	14	5	58	18	04	5	57	18	02	5	52	17	57
29	6	11	18	14	5	08	17	11	6	09	18	11	5	59	18	01	5	57	17	59	5	53	17	54
Oct. 3	6	10	18	12	5	08	17	08	6	09	18	08	5	59	17	58	5	58	17	56	5	53	17	51
7	6	10	18	10	5	08	17	06	6	09	18	06	5	59	17	56	5	58	17	53	5	54	17	48
11	6	10	18	08	5	08	17	04	6	09	18	03	5	59	17	53	5	59	17	50	5	55	17	45
15	6	10	18	06	5	09	17	01	6	10	18	01	6	00	17	51	6	00	17	47	5	56	17	42
19	6	10	18	05	5	09	16	59	6	10	17	59	6	00	17	49	6	01	17	44	5	57	17	39
23	6	10	18	03	5	10	16	57	6	11	17	57	6	11	17	47	6	02	17	42	5	58	17	37
27	6	10	18	02	5	10	16	56	6	12	17	55	6	02	17	45	6	03	17	40	5	59	17	35
31	6	11	18	01	5	11	16	54	6	13	17	54	6	03	17	43	6	04	17	38	6	00	17	33
Nov.4	6	11	18	00	5	12	16	53	6	14	17	52	6	04	17	42	6	06	17	36	6	02	17	31
8	6	12	17	59	5	13	16	52	6	15	17	51	6	05	17	41	6	08	17	35	6	04	17	30
12	6	13	17	59	5	15	16	52	6	17	17	51	6	06	17	40	6	09	17	34	6	05	17	29
16	6	15	17	59	5	16	16	51	6	18	17	50	6	08	17	40	6	11	17	33	6	07	17	28
20	6	16	17	59	5	18	16	51	6	20	17	50	6	10	17	40	6	13	17	33	6	09	17	27
24	6	18	18	00	5	20	16	52	6	22	17	50	6	12	17	40	6	15	17	33	6	12	17	27
28	6	19	18	00	5	22	16	52	6	24	17	51	6	14	17	40	6	18	17	33	6	14	17	27
Dec.2	6	21	18	01	5	24	16	53	6	26	17	52	6	16	17	41	6	20	17	33	6	16	17	28
6	6	23	18	03	5	26	16	54	6	28	17	53	6	18	17	42	6	22	17	34	6	19	17	29
10	6	25	18	04	5	28	16	55	6	30	17	54	6	20	17	44	6	25	17	35	6	21	17	30
14	6	27	18	06	5	30	16	57	6	33	17	55	6	22	17	45	6	27	17	37	6	23	17	31
18	6	29	18	07	5	32	16	59	6	35	17	57	6	24	17	47	6	29	17	39	6	25	17	33
22	6	31	18	09	5	34	17	01	6	37	17	59	6	26	17	49	6	31	17	40	6	28	17	35
26	6	33	18	11	5	36	17	03	6	39	18	01	6	28	17	51	6	33	17	43	6	29	17	37
30	6	35	18	13	5	38	17	05	6	41	18	03	6	30	17	53	6	35	17	45	6	31	17	39
Jan. 3 2020	6	38	18	17	5	40	17	09	6	42	18	07	6	32	17	55	6	37	17	48	6	32	17	42

N.B.—To obtain the times of Sunrise and Sunset for the Centre of the Sun, apply correction of $+3.5^m$ for Rise and -3.5^m for Set.

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

Date	Hyderabad 17°N 26′ L.M.T.Corr.+16m.2				Mumbai 18°N 58′ L.M.T.Corr.–38m.7				Puri 19°N 48′ L.M.T.Corr.+13m.3				Nagpur 21°N 09′ L.M.T.Corr.–13m.7				Ahmedabad 23°N 02′ L.M.T.Corr.–39m.6				Bhopal 23°N 16′ L.M.T.Corr.–20m.3			
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jan. 0	6	46	17	53	7	12	18	14	6	21	17	20	6	50	17	43	7	21	18	06	7	02	17	46
4	6	47	17	55	7	13	18	14	6	22	17	21	6	52	17	45	7	22	18	07	7	03	17	48
8	6	48	17	57	7	14	18	17	6	23	17	24	6	52	17	48	7	22	18	10	7	04	17	51
12	6	49	18	00	7	14	18	19	6	24	17	26	6	53	17	50	7	23	18	13	7	04	17	54
16	6	50	18	02	7	15	18	22	6	24	17	29	6	53	17	53	7	23	18	15	7	04	17	56
20	6	50	18	04	7	15	18	24	6	24	17	31	6	53	17	56	7	23	18	18	7	04	17	59
24	6	50	18	07	7	15	18	27	6	24	17	34	6	53	17	58	7	22	18	21	7	03	18	02
28	6	49	18	09	7	14	18	29	6	23	17	36	6	52	18	01	7	21	18	24	7	02	18	05
Feb. 1	6	48	18	11	7	13	18	32	6	22	17	39	6	51	18	03	7	20	18	27	7	01	18	07
5	6	47	18	13	7	12	18	34	6	21	17	41	6	49	18	06	7	18	18	29	6	59	18	10
9	6	46	18	15	7	10	18	36	6	19	17	43	6	47	18	08	7	16	18	32	6	57	18	13
13	6	44	18	17	7	08	18	38	6	17	17	45	6	45	18	10	7	14	18	34	6	55	18	15
17	6	42	18	18	7	06	18	40	6	15	17	47	6	43	18	12	7	11	18	36	6	52	18	17
21	6	40	18	20	7	04	18	41	6	12	17	49	6	40	18	14	7	08	18	38	6	49	18	19
25	6	37	18	21	7	01	18	43	6	10	17	50	6	37	18	16	7	05	18	40	6	46	18	21
Mar.1	6	35	18	22	6	58	18	44	6	07	17	52	6	34	18	17	7	02	18	42	6	43	18	23
5	6	32	18	23	6	55	18	45	6	04	17	53	6	31	18	19	6	58	18	44	6	39	18	25
9	6	29	18	24	6	52	18	47	6	01	17	55	6	28	18	21	6	54	18	46	6	36	18	27
13	6	26	18	25	6	49	18	48	5	57	17	56	6	24	18	22	6	51	18	48	6	32	18	29
17	6	23	18	26	6	46	18	49	5	54	17	57	6	21	18	23	6	47	18	49	6	28	18	30
21	6	20	18	27	6	42	18	50	5	51	17	58	6	17	18	24	6	43	18	51	6	24	18	32
25	6	17	18	28	6	39	18	51	5	47	17	59	6	13	18	26	6	39	18	52	6	20	18	33
29	6	13	18	29	6	36	18	52	5	44	18	00	6	10	18	27	6	35	18	54	6	16	18	35
Apr. 2	6	10	18	29	6	32	18	53	5	40	18	01	6	06	18	28	6	31	18	55	6	12	18	36
6	6	07	18	30	6	29	18	54	5	37	18	02	6	03	18	29	6	27	18	57	6	09	18	38
10	6	04	18	31	6	26	18	55	5	34	18	03	5	59	18	31	6	24	18	58	6	05	18	39
14	6	01	18	32	6	23	18	56	5	30	18	04	5	56	18	32	6	20	19	00	6	01	18	41
18	5	59	18	33	6	20	18	57	5	27	18	05	5	53	18	33	6	17	19	01	5	58	18	42
22	5	56	18	34	6	17	18	58	5	24	18	07	5	50	18	35	6	13	19	03	5	55	18	44
26	5	53	18	35	6	14	18	59	5	22	18	08	5	47	18	36	6	10	19	05	5	51	18	46
30	5	51	18	36	6	12	19	00	5	19	18	09	5	44	18	38	6	07	19	06	5	49	18	48
May 4	5	49	18	37	6	09	19	02	5	17	18	11	5	42	18	39	6	05	19	08	5	46	18	49
8	5	47	18	38	6	07	19	03	5	15	18	12	5	39	18	41	6	02	19	10	5	43	18	51
12	5	46	18	40	6	06	19	05	5	13	18	14	5	37	18	43	6	00	19	12	5	41	18	53
16	5	44	18	41	6	04	19	06	5	11	18	15	5	36	18	44	5	58	19	14	5	39	18	55
20	5	43	18	43	6	03	19	08	5	10	18	17	5	34	18	46	5	57	19	16	5	38	18	57
24	5	42	18	44	6	02	19	09	5	09	18	19	5	33	18	48	5	55	19	18	5	36	18	59
28	5	42	18	45	6	01	19	11	5	08	18	20	5	32	18	50	5	54	19	20	5	35	19	01
Jun. 1	5	41	18	47	6	01	19	12	5	07	18	22	5	32	18	51	5	54	19	21	5	35	19	03
5	5	41	18	48	6	01	19	14	5	07	18	23	5	31	18	53	5	53	19	23	5	34	19	04
9	5	41	18	50	6	01	19	15	5	07	18	25	5	31	18	54	5	53	19	25	5	34	19	06
13	5	42	18	51	6	01	19	17	5	07	18	26	5	32	18	56	5	53	19	26	5	34	19	07
17	5	42	18	52	6	02	19	18	5	08	18	27	5	32	18	57	5	54	19	27	5	35	19	09
21	5	43	18	53	6	02	19	19	5	09	18	28	5	33	18	58	5	55	19	28	5	35	19	10
25	5	44	18	54	6	03	19	20	5	10	18	29	5	34	18	59	5	56	19	29	5	36	19	10
29	5	45	18	54	6	04	19	20	5	11	18	29	5	35	18	59	5	57	19	29	5	38	19	11
Jul. 3	5	46	18	55	6	05	19	20	5	12	18	30	5	36	18	59	5	58	19	30	5	39	19	11

N.B.—To obtain the times of Sunrise and Sunset for the centre of the Sun, apply the correction of + 3.5m for Rise and –3.5m for Set.

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

Date	Hyderabad 17°N 26′ L.M.T.Corr.+16m.2				Mumbai 18°N 58′ L.M.T.Corr.–38m.7				Puri 19°N 48′ L.M.T.Corr.+13m.3				Nagpur 21°N 09′ L.M.T.Corr.–13m.7				Ahmedabad 23°N 02′ L.M.T.Corr.–39m.6				Bhopal 23°N 16′ L.M.T.Corr.–20m.3			
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jul. 3	5	46	18	55	6	05	19	20	5	12	18	30	5	36	18	59	5	58	19	30	5	39	19	11
7	5	47	18	55	6	07	19	20	5	13	18	30	5	38	18	59	5	59	19	29	5	40	19	11
11	5	49	18	55	6	08	19	20	5	15	18	29	5	39	18	59	6	01	19	29	5	42	19	10
15	5	50	18	54	6	10	19	20	5	16	18	29	5	41	18	58	6	03	19	28	5	44	19	10
19	5	51	18	54	6	11	19	19	5	18	18	28	5	42	18	58	6	04	19	27	5	45	19	09
23	5	53	18	53	6	12	19	18	5	19	18	27	5	44	18	56	6	06	19	26	5	47	19	07
27	5	54	18	51	6	14	19	17	5	21	18	26	5	45	18	55	6	08	19	24	5	49	19	06
31	5	55	18	50	6	15	19	15	5	22	18	24	5	47	18	53	6	09	19	22	5	50	19	04
Aug.4	5	56	18	48	6	16	19	13	5	24	18	22	5	48	18	51	6	11	19	20	5	52	19	01
8	5	57	18	46	6	18	19	11	5	25	18	20	5	50	18	49	6	13	19	17	5	54	18	59
12	5	58	18	44	6	19	19	09	5	26	18	17	5	51	18	46	6	14	19	15	5	55	18	56
16	5	59	18	42	6	20	19	06	5	27	18	15	5	52	18	43	6	16	19	12	5	57	18	53
20	6	00	18	39	6	21	19	03	5	28	18	12	5	54	18	40	6	17	19	08	5	58	18	49
24	6	01	18	36	6	22	19	00	5	29	18	09	5	55	18	37	6	19	19	05	6	00	18	46
28	6	01	18	33	6	23	18	57	5	30	18	06	5	56	18	33	6	20	19	01	6	01	18	42
Sep. 1	6	02	18	30	6	24	18	54	5	31	18	02	5	57	18	30	6	21	18	57	6	02	18	38
5	6	03	18	27	6	24	18	50	5	32	17	59	5	58	18	26	6	23	18	53	6	04	18	35
9	6	03	18	23	6	25	18	47	5	33	17	55	5	59	18	23	6	24	18	49	6	05	18	31
13	6	04	18	20	6	26	18	43	5	34	17	52	6	00	18	19	6	25	18	45	6	06	18	27
17	6	04	18	17	6	26	18	40	5	35	17	48	6	01	18	15	6	26	18	41	6	07	18	22
21	6	05	18	13	6	27	18	36	5	36	17	45	6	02	18	11	6	27	18	37	6	09	18	18
25	6	05	18	10	6	28	18	36	5	36	17	41	6	03	18	07	6	29	18	33	6	10	18	14
29	6	06	18	07	6	29	18	29	5	37	17	37	6	04	18	04	6	30	18	29	6	11	18	10
Oct. 3	6	07	18	04	6	29	18	26	5	38	17	34	6	05	18	00	6	31	18	25	6	13	18	06
7	6	07	18	01	6	30	18	22	5	39	17	31	6	06	17	57	6	33	18	21	6	14	18	03
11	6	08	17	58	6	31	18	19	5	40	17	27	6	07	17	53	6	34	18	18	6	16	17	59
15	6	09	17	55	6	32	18	16	5	41	17	24	6	09	17	50	6	36	18	14	6	17	17	55
19	6	10	17	52	6	34	18	13	5	43	17	21	6	10	17	47	6	38	18	11	6	19	17	52
23	6	11	17	50	6	35	18	11	5	44	17	18	6	12	17	44	6	39	18	08	6	21	17	49
27	6	12	17	47	6	36	18	08	5	46	17	16	6	13	17	41	6	41	18	05	6	23	17	46
31	6	14	17	45	6	38	18	06	5	47	17	13	6	15	17	39	6	44	18	02	6	25	17	43
Nov.4	6	15	17	44	6	40	18	04	5	49	17	11	6	17	17	37	6	46	18	00	6	27	17	41
8	6	17	17	42	6	42	18	03	5	51	17	10	6	19	17	35	6	48	17	58	6	29	17	39
12	6	19	17	41	6	44	18	01	5	53	17	08	6	22	17	33	6	51	17	56	6	32	17	37
16	6	21	17	40	6	46	18	01	5	56	17	07	6	24	17	32	6	53	17	55	6	35	17	36
20	6	23	17	40	6	48	18	00	5	58	17	07	6	27	17	31	6	56	17	54	6	37	17	35
24	6	26	17	40	6	51	18	00	6	00	17	06	6	29	17	31	6	59	17	53	6	40	17	34
28	6	28	17	40	6	53	18	00	6	03	17	06	6	32	17	31	7	01	17	53	6	43	17	34
Dec.2	6	30	17	40	6	56	18	00	6	05	17	07	6	34	17	31	7	04	17	53	6	45	17	34
6	6	33	17	41	6	58	18	01	6	08	17	07	6	37	17	32	7	07	17	54	6	48	17	35
10	6	35	17	42	7	01	18	02	6	10	17	08	6	39	17	33	7	09	17	55	6	51	17	36
14	6	37	17	44	7	03	18	03	6	12	17	10	6	42	17	34	7	12	17	56	6	53	17	37
18	6	40	17	45	7	05	18	05	6	15	17	11	6	44	17	36	7	14	17	58	6	56	17	38
22	6	42	17	47	7	07	18	07	6	17	17	13	6	46	17	38	7	16	17	59	6	58	17	40
26	6	44	17	49	7	09	18	09	6	19	17	15	6	48	17	40	7	18	18	02	7	00	17	42
30	6	45	17	52	7	11	18	11	6	20	17	18	6	50	17	42	7	20	18	04	7	01	17	45
Jan. 3 2020	6	47	17	55	7	13	18	13	6	22	17	22	6	51	17	45	7	22	18	07	7	03	17	48

N.B.—To obtain the times of Sunrise and Sunset in L.M.T. apply the correction for L.M.T. as indicated above for each station.

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

Date	Aijawl 23°N 44′ L.M.T. Corr.:+41m.0				Agartala 23°N 49′ L.M.T. Corr.:+35m.1				Imphal 24°N 48′ L.M.T. Corr.:+45m.8				Varanasi 25°N 19′ L.M.T. Corr.:+2m.1				Patna 25°N 36′ L.M.T. Corr.:+10m.5				Kohima 25°N 41′ L.M.T. Corr.:+46m.5			
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jan. 0	6	02	16	45	6	07	16	50	5	59	16	38	6	43	17	19	6	35	17	10	5	09	16	34
4	6	02	16	45	6	08	16	51	5	59	16	39	6	44	17	22	6	36	17	12	6	00	16	36
8	6	03	16	48	6	09	16	54	6	00	16	42	6	45	17	25	6	37	17	15	6	01	16	39
12	6	03	16	51	6	10	16	57	6	01	16	44	6	45	17	27	6	37	17	18	6	01	16	41
16	6	04	16	54	6	10	17	00	6	01	16	47	6	45	17	30	6	37	17	21	6	01	16	45
20	6	03	16	57	6	09	17	03	6	00	16	50	6	45	17	33	6	37	17	24	6	01	16	48
24	6	03	17	00	6	09	17	06	5	59	16	53	6	44	17	37	6	36	17	27	6	00	16	51
28	6	02	17	03	6	08	17	08	5	58	16	56	6	42	17	39	6	35	17	30	5	59	16	54
Feb. 1	6	00	17	05	6	06	17	11	5	57	16	59	6	41	17	42	6	33	17	33	5	57	16	57
5	5	58	17	08	6	04	17	14	5	55	17	02	6	39	17	45	6	31	17	36	5	55	17	00
9	5	56	17	11	6	02	17	17	5	53	17	05	6	37	17	48	6	29	17	39	5	53	17	03
13	5	54	17	13	6	00	17	19	5	50	17	07	6	34	17	51	6	26	17	42	5	50	17	05
17	5	51	17	16	5	57	17	21	5	48	17	10	6	31	17	53	6	23	17	44	5	48	17	08
21	5	48	17	18	5	54	17	24	5	45	17	12	6	28	17	55	6	20	17	47	5	44	17	10
25	5	45	17	20	5	51	17	26	5	41	17	15	6	25	17	58	6	17	17	49	5	41	17	13
Mar. 1	5	42	17	22	5	48	17	28	5	38	17	17	6	21	18	00	6	13	17	51	5	37	17	15
5	5	38	17	24	5	44	17	30	5	34	17	19	6	17	18	02	6	09	17	53	5	34	17	17
9	5	35	17	26	5	41	17	32	5	30	17	21	6	14	18	04	6	06	17	55	5	30	17	19
13	5	31	17	27	5	37	17	33	5	26	17	22	6	10	18	06	6	02	17	57	5	26	17	21
17	5	27	17	29	5	33	17	35	5	22	17	24	6	06	18	07	5	57	17	59	5	21	17	23
21	5	23	17	31	5	29	17	37	5	18	17	26	6	02	18	09	5	53	18	01	5	17	17	25
25	5	19	17	32	5	25	17	38	5	14	17	28	5	58	18	11	5	49	18	03	5	13	17	27
29	5	15	17	34	5	21	17	40	5	10	17	29	5	53	18	13	5	45	18	05	5	09	17	29
Apr. 2	5	11	17	35	5	17	17	41	5	06	17	31	5	49	18	14	5	41	18	06	5	04	17	30
6	5	07	17	37	5	13	17	43	5	02	17	33	5	45	18	16	5	37	18	08	5	00	17	32
10	5	03	17	39	5	09	17	45	4	58	17	35	5	41	18	18	5	33	18	10	4	56	17	34
14	5	00	17	40	5	05	17	46	4	54	17	36	5	37	18	20	5	29	18	12	4	52	17	36
18	4	56	17	42	5	02	17	48	4	50	17	38	5	34	18	22	5	25	18	14	4	48	17	38
22	4	53	17	44	4	58	17	50	4	47	17	40	5	30	18	23	5	21	18	16	4	45	17	40
26	4	49	17	45	4	55	17	51	4	43	17	42	5	27	18	25	5	18	18	18	4	41	17	42
30	4	46	17	47	4	52	17	53	4	40	17	44	5	24	18	27	5	15	18	20	4	38	17	44
May 4	4	43	17	49	4	49	17	55	4	37	17	46	5	21	18	29	5	12	18	22	4	35	17	46
8	4	41	17	51	4	47	17	57	4	35	17	48	5	18	18	31	5	09	18	24	4	32	17	48
12	4	39	17	53	4	44	17	59	4	32	17	50	5	15	18	34	5	06	18	26	4	30	17	50
16	4	37	17	55	4	42	18	01	4	30	17	52	5	13	18	36	5	04	18	28	4	27	17	52
20	4	35	17	56	4	41	18	03	4	28	17	54	5	11	18	38	5	02	18	30	4	26	17	54
24	4	34	17	58	4	39	18	04	4	27	17	55	5	10	18	40	5	01	18	32	4	24	17	56
28	4	32	18	00	4	38	18	06	4	26	17	57	5	09	18	42	5	00	18	34	4	23	17	58
Jun. 1	4	32	18	02	4	37	18	08	4	25	17	59	5	08	18	44	4	59	18	36	4	22	18	00
5	4	31	18	04	4	37	18	10	4	25	18	01	5	07	18	45	4	58	18	38	4	22	18	02
9	4	31	18	05	4	37	18	11	4	24	18	02	5	07	18	47	4	58	18	40	4	21	18	03
13	4	31	18	07	4	37	18	13	4	25	18	04	5	07	18	49	4	58	18	41	4	21	18	05
17	4	32	18	08	4	37	18	14	4	25	18	05	5	08	18	50	4	58	18	42	4	22	18	06
21	4	33	18	09	4	38	18	15	4	26	18	06	5	09	18	51	4	59	18	43	4	23	18	07
25	4	33	18	09	4	39	18	16	4	27	18	07	5	10	18	52	5	00	18	44	4	24	18	08
29	4	35	18	10	4	40	18	16	4	28	18	07	5	11	18	52	5	01	18	44	4	25	18	08
Jul. 3	4	36	18	10	4	42	18	16	4	29	18	07	5	12	18	52	5	03	18	45	4	26	18	08

N.B.—To obtain the times of Sunrise and Sunset in L.M.T. apply the correction for L.M.T. as indicated above for each station.

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

Date	Aijawl 23°N 44′ L.M.T.Corr.+41m.0				Agartala 23°N 49′ L.M.T.Corr.+35m.1				Imphal 24°N 48′ L.M.T.Corr.+45m.8				Varanasi 25°N 19′ L.M.T.Corr.+2m.1				Patna 25°N 36′ L.M.T.Corr.+10m.5				Kohima 25°N 41′ L.M.T.Corr.+46m.5			
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jul. 3	4	36	18	10	4	42	18	16	4	29	18	07	5	12	18	52	5	03	18	45	4	26	18	08
7	4	37	18	10	4	43	18	16	4	31	18	07	5	14	18	52	5	04	18	44	4	28	18	08
11	4	39	18	10	4	45	18	16	4	32	18	07	5	15	18	51	5	06	18	44	4	29	18	08
15	4	41	18	09	4	46	18	15	4	34	18	06	5	17	18	51	5	08	18	43	4	31	18	07
19	4	43	18	08	4	48	18	14	4	36	18	05	5	19	18	49	5	10	18	42	4	33	18	06
23	4	44	18	06	4	50	18	13	4	38	18	03	5	21	18	48	5	12	18	40	4	35	18	04
27	4	46	18	05	4	52	18	11	4	40	18	02	5	23	18	46	5	14	18	38	4	37	18	02
31	4	48	18	03	4	54	18	09	4	42	18	00	5	25	18	44	5	16	18	36	4	39	18	00
Aug.4	4	50	18	00	4	55	18	06	4	43	17	57	5	27	18	41	5	18	18	34	4	41	17	58
8	4	51	17	58	4	57	18	04	4	45	17	55	5	29	18	39	5	20	18	31	4	43	17	55
12	4	53	17	55	4	59	18	01	4	47	17	52	5	30	18	36	5	21	18	28	4	45	17	52
16	4	55	17	52	5	01	17	58	4	49	17	49	5	32	18	32	5	23	18	24	4	47	17	49
20	4	56	17	49	5	02	17	55	4	51	17	45	5	34	18	29	5	25	18	21	4	48	17	45
24	4	58	17	45	5	04	17	51	4	52	17	42	5	36	18	25	5	27	18	17	4	50	17	41
28	4	59	17	42	5	05	17	48	4	54	17	38	5	37	18	21	5	28	18	13	4	52	17	38
Sep. 1	5	01	17	38	5	07	17	44	4	55	17	34	5	39	18	17	5	30	18	09	4	53	17	33
5	5	02	17	34	5	08	17	40	4	57	17	30	5	40	18	13	5	32	18	05	4	55	17	29
9	5	03	17	30	5	09	17	36	4	58	17	26	5	42	18	09	5	33	18	01	4	57	17	25
13	5	05	17	26	5	11	17	32	5	00	17	21	5	43	18	05	5	35	17	57	4	58	17	21
17	5	06	17	22	5	12	17	28	5	01	17	17	5	45	18	00	5	36	17	52	5	00	17	16
21	5	07	17	17	5	13	17	23	5	02	17	13	5	46	17	56	5	38	17	48	5	01	17	12
25	5	09	17	13	5	15	17	19	5	04	17	08	5	48	17	52	5	39	17	44	5	03	17	07
29	5	10	17	09	5	16	17	15	5	05	17	04	5	49	17	48	5	41	17	39	5	05	17	03
Oct. 3	5	12	17	05	5	18	17	11	5	07	17	00	5	51	17	44	5	43	17	35	5	06	16	59
7	5	13	17	01	5	19	17	07	5	09	16	56	5	52	17	39	5	44	17	31	5	08	16	54
11	5	15	16	57	5	21	17	03	5	10	16	52	5	54	17	35	5	46	17	27	5	10	16	50
15	5	16	16	54	5	22	16	59	5	12	16	48	5	56	17	32	5	48	17	23	5	12	16	46
19	5	18	16	50	5	24	16	56	5	14	16	45	5	58	17	28	5	50	17	19	5	14	16	43
23	5	20	16	47	5	26	16	53	5	16	16	41	6	00	17	25	5	52	17	16	5	16	16	39
27	5	22	16	44	5	28	16	50	5	18	16	38	6	02	17	21	5	54	17	13	5	18	16	36
31	5	24	16	41	5	30	16	47	5	21	16	35	6	05	17	18	5	57	17	10	5	21	16	33
Nov.4	5	27	16	39	5	33	16	44	5	23	16	33	6	07	17	16	5	59	17	07	5	23	16	30
8	5	29	16	36	5	35	16	42	5	26	16	30	6	10	17	14	6	02	17	05	5	26	16	28
12	5	32	16	35	5	38	16	40	5	28	16	28	6	12	17	12	6	05	17	03	5	29	16	26
16	5	34	16	33	5	40	16	39	5	31	16	27	6	15	17	10	6	07	17	01	5	31	16	24
20	5	37	16	32	5	43	16	38	5	34	16	26	6	18	17	09	6	10	17	00	5	34	16	23
24	5	40	16	32	5	46	16	37	5	37	16	25	6	21	17	08	6	13	16	59	5	37	16	22
28	5	42	16	31	5	49	16	37	5	39	16	25	6	23	17	08	6	16	16	58	5	40	16	22
Dec.2	5	45	16	31	5	51	16	37	5	42	16	25	6	26	17	08	6	19	16	58	5	43	16	22
6	5	48	16	32	5	54	16	37	5	45	16	25	6	29	17	08	6	22	16	59	5	46	16	22
10	5	50	16	33	5	57	16	38	5	48	16	26	6	32	17	09	6	24	17	00	5	49	16	23
14	5	53	16	34	5	59	16	40	5	50	16	27	6	34	17	10	6	27	17	01	5	51	16	24
18	5	55	16	36	6	01	16	41	5	53	16	29	6	37	17	12	6	29	17	02	5	53	16	26
22	5	57	16	37	6	03	16	43	5	55	16	31	6	39	17	14	6	31	17	04	5	56	16	28
26	5	59	16	40	6	05	16	45	5	56	16	33	6	41	17	16	6	33	17	06	5	57	16	30
30	6	01	16	42	6	07	16	48	5	58	16	35	6	42	17	18	6	35	17	09	5	59	16	32
Jan. 3 2020	6	02	16	46	6	08	16	51	6	00	16	40	6	44	17	21	6	36	17	12	6	00	16	36

N.B.—To obtain the times of Sunrise and Sunset for the centre of the Sun, apply correction of $+3.5^m$ for Rise and -3.5^m for Set.

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

Date	Guwahati 26°N 10′ L.M.T.Corr.+37m.0				Jaipur 26°N 55′ L.M.T.Corr.–26m.7				Delhi 28°N 39′ L.M.T.Corr.–21m.1				Chandigarh 30°N 44′ L.M.T.Corr.–22m.5				Simla 31°N 06′ L.M.T.Corr.–21m.3				Amritsar 31°N 38′ L.M.T.Corr.–30m.5			
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jan. 0	6	11	16	43	7	16	17	46	7	13	17	36	7	18	17	33	7	20	17	30	7	31	17	39
4	6	12	16	45	7	17	17	47	7	15	17	38	7	21	17	35	7	21	17	32	7	31	17	40
8	6	12	16	48	7	17	17	50	7	15	17	41	7	22	17	38	7	21	17	35	7	31	17	43
12	6	12	16	51	7	17	17	53	7	15	17	44	7	22	17	41	7	21	17	39	7	31	17	47
16	6	12	16	54	7	17	17	56	7	15	17	47	7	21	17	44	7	20	17	42	7	31	17	50
20	6	12	16	57	7	17	17	59	7	14	17	50	7	20	17	48	7	19	17	46	7	30	17	54
24	6	11	17	00	7	16	18	02	7	13	17	54	7	19	17	51	7	18	17	49	7	28	17	57
28	6	10	17	04	7	14	18	05	7	12	17	57	7	17	17	55	7	16	17	53	7	26	18	01
Feb. 1	6	08	17	07	7	13	18	08	7	10	18	00	7	15	17	58	7	14	17	56	7	24	18	04
5	6	06	17	10	7	10	18	11	7	07	18	03	7	12	18	02	7	11	18	00	7	21	18	08
9	6	04	17	12	7	08	18	14	7	05	18	06	7	09	18	05	7	08	18	03	7	18	18	12
13	6	01	17	15	7	05	18	17	7	02	18	09	7	06	18	09	7	05	18	07	7	15	18	15
17	5	58	17	18	7	02	18	20	6	58	18	12	7	02	18	12	7	01	18	10	7	11	18	18
21	5	55	17	20	6	59	18	22	6	55	18	15	6	58	18	15	6	56	18	13	7	07	18	22
25	5	52	17	23	6	55	18	25	6	51	18	18	6	54	18	18	6	53	18	16	7	03	18	25
Mar.1	5	48	17	25	6	51	18	27	6	47	18	21	6	50	18	21	6	49	18	19	6	58	18	28
5	5	44	17	27	6	47	18	30	6	42	18	23	6	45	18	24	6	44	18	22	6	54	18	31
9	5	40	17	29	6	43	18	32	6	38	18	26	6	41	18	26	6	39	18	25	6	49	18	34
13	5	36	17	31	6	39	18	34	6	34	18	28	6	36	18	29	6	34	18	27	6	44	18	37
17	5	32	17	33	6	35	18	36	6	29	18	30	6	31	18	32	6	29	18	30	6	39	18	39
21	5	28	17	35	6	30	18	38	6	24	18	33	6	26	18	34	6	24	18	33	6	34	18	42
25	5	23	17	37	6	26	18	40	6	20	18	35	6	21	18	37	6	19	18	35	6	29	18	45
29	5	19	17	39	6	21	18	42	6	15	18	37	6	16	18	40	6	15	18	38	6	23	18	48
Apr.2	5	15	17	41	6	17	18	44	6	11	18	39	6	11	18	42	6	10	18	41	6	18	18	50
6	5	10	17	43	6	13	18	46	6	06	18	42	6	07	18	45	6	05	18	43	6	13	18	53
10	5	06	17	45	6	09	18	48	6	02	18	44	6	02	18	47	6	00	18	46	6	09	18	56
14	5	02	17	47	6	05	18	50	5	58	18	46	5	57	18	50	5	55	18	49	6	04	18	58
18	4	58	17	49	6	01	18	52	5	53	18	48	5	53	18	52	5	51	18	51	5	59	19	01
22	4	55	17	51	5	57	18	54	5	49	18	51	5	49	18	55	5	47	18	54	5	55	19	04
26	4	51	17	53	5	53	18	56	5	46	18	53	5	45	18	58	5	43	18	57	5	51	19	07
30	4	48	17	55	5	50	18	59	5	42	18	55	5	41	19	00	5	39	18	59	5	47	19	09
May4	4	45	17	57	5	47	19	01	5	39	18	58	5	37	19	03	5	35	19	02	5	43	19	12
8	4	42	17	59	5	44	19	03	5	36	19	00	5	34	19	06	5	32	19	05	5	40	19	15
12	4	39	18	01	5	42	19	05	5	33	19	03	5	31	19	09	5	29	19	08	5	37	19	18
16	4	37	18	03	5	39	19	08	5	31	19	05	5	28	19	11	5	26	19	10	5	34	19	21
20	4	35	18	05	5	37	19	10	5	28	19	08	5	26	19	14	5	23	19	13	5	32	19	23
24	4	34	18	07	5	36	19	12	5	27	19	10	5	24	19	16	5	21	19	16	5	29	19	26
28	4	32	18	09	5	35	19	14	5	25	19	12	5	22	19	19	5	20	19	18	5	28	19	29
Jun. 1	4	31	18	11	5	34	19	16	5	24	19	14	5	21	19	21	5	19	19	20	5	27	19	31
5	4	31	18	13	5	35	19	18	5	23	19	16	5	20	19	23	5	18	19	22	5	26	19	33
9	4	31	18	15	5	33	19	20	5	23	19	18	5	20	19	25	5	17	19	24	5	25	19	35
13	4	31	18	16	5	33	19	21	5	23	19	20	5	20	19	27	5	17	19	26	5	25	19	37
17	4	31	18	17	5	33	19	23	5	24	19	21	5	20	19	28	5	17	19	27	5	25	19	38
21	4	32	18	18	5	34	19	24	5	24	19	22	5	21	19	29	5	18	19	28	5	26	19	39
25	4	33	18	19	5	35	19	24	5	25	19	23	5	22	19	30	5	19	19	29	5	27	19	40
29	4	34	18	20	5	36	19	25	5	26	19	23	5	23	19	30	5	20	19	29	5	28	19	40
Jul. 3	4	35	18	20	5	37	19	25	5	28	19	23	5	24	19	30	5	22	19	29	5	30	19	40

N.B.—To obtain the times of Sunrise and Sunset in L.M.T. apply the correction for L.M.T. as indicated above for each station.

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

Date	Guwahati 26°N 10′ L.M.T.Corr.+37m.0				Jaipur 26°N 55′ L.M.T.Corr.–26m.7				Delhi 28°N 39′ L.M.T.Corr.–21m.1				Chandigarh 30°N 44′ L.M.T.Corr.–22m.5				Simla 31°N 06′ L.M.T.Corr.–21m.3				Amritsar 31°N 38′ L.M.T.Corr.–30m.5			
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jul. 3	4	35	18	20	5	37	19	25	5	28	19	23	5	24	19	30	5	22	19	29	5	30	19	40
7	4	37	18	20	5	39	19	25	5	30	19	23	5	26	19	30	5	24	19	29	5	32	19	39
11	4	39	18	19	5	41	19	24	5	31	19	22	5	28	19	29	5	26	19	28	5	34	19	39
15	4	41	18	18	5	43	19	23	5	33	19	21	5	30	19	28	5	28	19	27	5	36	19	37
19	4	43	18	17	5	45	19	22	5	35	19	20	5	33	19	26	5	30	19	25	5	38	19	36
23	4	45	18	15	5	47	19	20	5	38	19	18	5	35	19	24	5	33	19	23	5	41	19	34
27	4	47	18	13	5	49	19	18	5	40	19	16	5	37	19	22	5	35	19	21	5	43	19	31
31	4	49	18	11	5	51	19	16	5	42	19	13	5	40	19	19	5	38	19	18	5	46	19	28
Aug. 4	4	51	18	19	5	53	19	13	5	44	19	10	5	42	19	16	5	40	19	15	5	48	19	25
8	4	53	18	06	5	55	19	10	5	47	19	07	5	45	19	12	5	43	19	11	5	51	19	22
12	4	55	18	03	5	57	19	07	5	49	19	04	5	47	19	09	5	45	19	08	5	53	19	18
16	4	56	17	59	5	59	19	03	5	51	19	00	5	50	19	05	5	48	19	04	5	56	19	14
20	4	58	17	56	6	01	19	00	5	53	18	56	5	52	19	01	5	50	18	59	5	58	19	09
24	5	00	17	52	6	02	18	56	5	55	18	52	5	54	18	56	5	52	18	55	6	01	19	05
28	5	02	17	48	6	04	18	52	5	57	18	48	5	57	18	51	5	55	18	50	6	03	19	00
Sep. 1	5	04	17	44	6	06	18	47	5	59	18	43	5	59	18	47	5	57	18	45	6	06	18	55
5	5	05	17	40	6	08	18	43	6	01	18	39	6	01	18	42	5	59	18	40	6	08	18	50
9	5	07	17	36	6	09	18	39	6	08	18	34	6	03	18	37	6	02	18	35	6	10	18	45
13	5	08	17	31	6	11	18	34	6	05	18	29	6	06	18	32	6	04	18	30	6	13	18	40
17	5	10	17	27	6	13	18	29	6	07	18	24	6	08	18	26	6	06	18	25	6	15	18	34
21	5	12	17	22	6	14	18	25	6	09	18	19	6	10	18	21	6	08	18	20	6	18	18	29
25	5	13	17	18	6	16	18	20	6	11	18	15	6	12	18	16	6	11	18	15	6	20	18	24
29	5	15	17	23	6	18	18	16	6	13	18	10	6	15	18	11	6	13	18	10	6	22	18	19
Oct. 3	5	17	17	09	6	20	18	11	6	15	18	05	6	17	18	06	6	16	18	05	6	25	18	14
7	5	19	17	05	6	22	18	07	6	17	18	01	6	20	18	02	6	18	18	00	6	28	18	09
11	5	21	17	00	6	24	18	03	6	19	17	57	6	22	17	57	6	21	17	55	6	30	18	04
15	5	23	16	56	6	26	17	59	6	21	17	52	6	25	17	52	6	23	17	51	6	33	17	59
19	5	25	16	53	6	28	17	55	6	24	17	48	6	27	17	48	6	26	17	46	6	36	17	55
23	5	27	16	49	6	30	17	52	6	26	17	44	6	30	17	44	6	29	17	42	6	39	17	51
27	5	29	16	46	6	33	17	48	6	29	17	41	6	33	17	40	6	32	17	38	6	42	17	47
31	5	32	16	43	6	35	17	45	6	32	17	38	6	36	17	36	6	35	17	34	6	45	17	43
Nov. 4	5	34	16	40	6	38	17	43	6	35	17	35	6	40	17	33	6	38	17	31	6	48	17	39
8	5	37	16	38	6	41	17	40	6	38	17	32	6	43	17	30	6	42	17	28	6	52	17	36
12	5	40	16	36	6	44	17	38	6	41	17	30	6	46	17	28	6	45	17	25	6	55	17	34
16	5	43	16	34	6	47	17	36	6	44	17	28	6	50	17	26	6	49	17	23	6	59	17	32
20	5	45	16	33	6	50	17	35	6	47	17	26	6	53	17	24	6	52	17	21	7	02	17	30
24	5	48	16	32	6	53	17	34	6	50	17	25	6	56	17	22	6	56	17	20	7	06	17	28
28	5	51	16	31	6	56	17	34	6	54	17	24	7	00	17	22	6	59	17	19	7	09	17	27
Dec. 2	5	54	16	31	6	59	17	33	6	57	17	24	7	03	17	21	7	02	17	19	7	13	17	27
6	5	57	16	32	7	02	17	34	7	00	17	24	7	06	17	21	7	05	17	19	7	16	17	27
10	6	00	16	32	7	04	17	35	7	03	17	25	7	09	17	22	7	09	17	19	7	19	17	27
14	6	02	16	34	7	07	17	36	7	05	17	26	7	12	17	23	7	11	17	20	7	22	17	28
18	6	05	16	35	7	09	17	37	7	08	17	28	7	15	17	24	7	14	17	22	7	24	17	30
22	6	07	16	37	7	12	17	39	7	10	17	30	7	17	17	26	7	16	17	24	7	27	17	32
26	6	09	16	39	7	14	17	41	7	12	17	32	7	19	17	28	7	18	17	26	7	28	17	34
30	6	10	16	42	7	15	17	44	7	13	17	34	7	20	17	31	7	19	17	28	7	30	17	36
Jan. 3 2020	6	12	16	45	7	17	17	48	7	14	17	38	7	20	17	35	7	20	17	32	7	32	17	41

N.B.—To obtain the times of Sunrise and Sunset for the centre of the Sun, apply correction of $+3.5^m$ for Rise and -3.5^m for Set.

Sunrise and Sunset (*upper limb*) for certain places in India, 2019

(Indian Standard Time)

Date	Bhubaneswar 20°N 15′ L.M.T.Corr.+13m.3				Lucknow 26°N 51′ L.M.T.Corr.–6m.3				Srinagar 34°N 06′ L.M.T.Corr.–30m.8			
	Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m
Jan. 0	6	23	17	19	6	56	17	26	7	38	17	33
4	6	23	17	20	6	56	17	27	7	37	17	35
8	6	24	17	23	6	57	17	29	7	37	17	38
12	6	24	17	25	6	57	17	32	7	37	17	42
16	6	25	17	28	6	57	17	36	7	36	17	45
20	6	25	17	31	6	56	17	39	7	35	17	49
24	6	24	17	33	6	55	17	42	7	33	17	53
28	6	24	17	36	6	54	17	45	7	31	17	57
Feb. 1	6	22	17	38	6	52	17	48	7	29	18	01
5	6	21	17	40	6	50	17	51	7	26	18	05
9	6	19	17	43	6	47	17	54	7	22	18	09
13	6	17	17	45	6	44	17	57	7	18	18	12
17	6	15	17	47	6	41	17	59	7	14	18	16
21	6	13	17	48	6	38	18	02	7	10	18	20
25	6	10	17	50	6	34	18	05	7	05	18	23
Mar. 1	6	07	17	52	6	31	18	07	7	00	18	27
5	6	04	17	53	6	27	18	09	6	55	18	30
9	6	01	17	54	6	23	18	11	6	50	18	33
13	5	57	17	56	6	18	18	13	6	45	18	36
17	5	54	17	57	6	14	18	16	6	39	18	40
21	5	51	17	58	6	10	18	18	6	34	18	43
25	5	47	17	59	6	05	18	20	6	28	18	46
29	5	44	18	00	6	01	18	22	6	23	18	49
Apr. 2	5	40	18	01	5	57	18	25	6	18	18	52
6	5	37	18	02	5	53	18	25	6	12	18	55
10	5	33	18	03	5	48	18	27	6	07	18	58
14	5	30	18	05	5	44	18	29	6	02	19	01
18	5	27	18	06	5	40	18	32	5	57	19	04
22	5	24	18	07	5	37	18	34	5	53	19	07
26	5	21	18	08	5	33	18	36	5	48	19	10
30	5	18	18	10	5	30	18	38	5	44	19	14
May 4	5	16	18	11	5	26	18	40	5	40	19	17
8	5	14	18	13	5	24	18	42	5	36	19	20
12	5	12	18	14	5	21	18	45	5	33	19	23
16	5	10	18	16	5	19	18	47	5	30	19	26
20	5	09	18	18	5	17	18	49	5	27	19	29
24	5	08	18	19	5	15	18	51	5	25	19	32
28	5	07	18	21	5	14	18	54	5	23	19	34
Jun. 1	5	06	18	23	5	13	18	56	5	21	19	37
5	5	07	18	24	5	12	18	57	5	20	19	39
9	5	06	18	26	5	12	18	59	5	20	19	41
13	5	06	18	27	5	12	19	01	5	19	19	43
17	5	07	18	28	5	12	19	02	5	20	19	44
21	5	08	18	29	5	13	19	03	5	20	19	45
25	5	09	18	30	5	14	19	04	5	21	19	46
29	5	10	18	30	5	15	19	04	5	23	19	46
Jul. 3	5	11	18	31	5	17	19	04	5	24	19	46

Date	Bhubaneswar 20°N 15′ L.M.T.Corr.+13m.3				Lucknow 26°N 51′ L.M.T.Corr.–6m.3				Srinagar 34°N 06′ L.M.T.Corr.–30m.8			
	Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m
Jul. 3	5	11	18	31	5	17	19	04	5	24	19	46
7	5	12	18	31	5	18	19	04	5	26	19	46
11	5	14	18	30	5	20	19	03	5	28	19	45
15	5	15	18	30	5	22	19	03	5	31	19	43
19	5	17	18	29	5	24	19	01	5	33	19	41
23	5	18	18	28	5	26	19	00	5	36	19	39
27	5	20	18	26	5	28	18	57	5	39	19	36
31	5	21	18	25	5	30	18	55	5	41	19	33
Aug.4	5	23	18	23	5	32	18	52	5	44	19	30
8	5	24	18	20	5	34	18	50	5	47	19	26
12	5	26	18	18	5	36	18	46	5	50	19	22
16	5	27	18	15	5	38	18	43	5	53	19	17
20	5	28	18	12	5	40	18	39	5	56	19	13
24	5	29	18	09	5	42	18	35	5	59	19	08
28	5	30	18	06	5	44	18	31	6	01	19	03
Sep. 1	5	31	18	03	5	46	18	27	6	04	18	57
5	5	32	17	59	5	47	18	22	6	07	18	52
9	5	33	17	56	5	49	18	18	6	09	18	47
13	5	34	17	52	5	51	18	14	6	12	18	41
17	5	35	17	48	5	53	18	09	6	15	18	35
21	5	35	17	45	5	54	18	05	6	18	18	30
25	5	36	17	41	5	56	18	00	6	20	18	24
29	5	37	17	37	5	58	17	56	6	23	18	19
Oct. 3	5	38	17	34	5	59	17	51	6	26	18	13
7	5	39	17	30	6	01	17	47	6	29	18	08
11	5	40	17	27	6	03	17	43	6	32	18	03
15	5	42	17	24	6	05	17	39	6	35	17	58
19	5	43	17	21	6	08	17	35	6	38	17	53
23	5	45	17	18	6	10	17	31	6	42	17	48
27	5	46	17	15	6	12	17	28	6	45	17	44
31	5	48	17	13	6	15	17	25	6	49	17	40
Nov.4	5	50	17	11	6	17	17	22	6	52	17	36
8	5	52	17	09	6	20	17	19	6	56	17	33
12	5	54	17	08	6	23	17	17	7	00	17	30
16	5	56	17	07	6	26	17	16	7	04	17	27
20	5	59	17	06	6	29	17	14	7	08	17	25
24	6	01	17	05	6	32	17	13	7	11	17	24
28	6	03	17	05	6	35	17	13	7	15	17	22
Dec. 2	6	06	17	06	6	38	17	13	7	19	17	22
6	6	08	17	06	6	41	17	13	7	22	17	22
10	6	11	17	07	6	44	17	14	7	25	17	22
14	6	13	17	09	6	46	17	15	7	28	17	23
18	6	15	17	10	6	49	17	16	7	31	17	24
22	6	18	17	12	6	51	17	18	7	33	17	26
26	6	19	17	15	6	53	17	21	7	35	17	28
30	6	21	17	17	6	54	17	23	7	36	17	31
Jan. 3 2020	6	24	17	21	6	56	17	28	7	38	17	35

N.B.—To obtain the times of Sunrise and Sunset in L. M. T. apply the correction of L. M. T. as indicated above for each station.

Sunrise and Sunset (*upper limb*) of Colombo (in I.S.T.), Dhaka (in B.S.T.) and London (in Z.S.T.), 2019

Date	Colombo 6°N 56′ (In I.S.T.) L.M.T. Corr.−10m.5				Dhaka 23°N 43′ (In B.S.T.) L.M.T. Corr.+31m.7				London 51°N 32′ (In Z.S.T.) L.M.T. Corr.+0m.3			
	Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m
Jan. 0	6	21	18	05	6	40	17	22	8	06	16	01
4	6	23	18	07	6	41	17	25	8	06	16	05
8	6	24	18	09	6	42	17	27	8	04	16	10
12	6	26	18	11	6	43	17	30	8	02	16	15
16	6	27	18	13	6	43	17	33	7	59	16	21
20	6	28	18	15	6	42	17	36	7	55	16	28
24	6	28	18	16	6	42	17	39	7	51	16	35
28	6	29	18	18	6	41	17	42	7	45	16	42
Feb. 1	6	29	18	19	6	39	17	45	7	39	16	49
5	6	29	18	20	6	37	17	47	7	33	16	56
9	6	28	18	21	6	35	17	50	7	26	17	04
13	6	28	18	21	6	33	17	53	7	19	17	11
17	6	27	18	22	6	30	17	55	7	11	17	19
21	6	26	18	22	6	27	17	57	7	03	17	26
25	6	25	18	22	6	24	17	59	6	55	17	33
Mar. 1	6	23	18	22	6	21	18	01	6	46	17	40
5	6	22	18	22	6	18	18	03	6	37	17	47
9	6	20	18	22	6	14	18	05	6	29	17	54
13	6	18	18	22	6	10	18	07	6	20	18	01
17	6	16	18	21	6	06	18	08	6	11	18	08
21	6	14	18	21	6	02	18	10	6	02	18	14
25	6	12	18	21	5	58	18	11	5	53	18	21
29	6	10	18	20	5	54	18	13	5	44	18	28
Apr. 2	6	09	18	20	5	50	18	15	5	35	18	35
6	6	07	18	19	5	46	18	16	5	26	18	41
10	6	05	18	19	5	43	18	18	5	17	18	48
14	6	03	18	19	5	39	18	19	5	08	18	55
18	6	01	18	18	5	35	18	21	4	59	19	02
22	6	00	18	18	5	32	18	23	4	51	19	08
26	5	58	18	18	5	29	18	24	4	42	19	15
30	5	57	18	18	5	26	18	26	4	35	19	22
May 4	5	56	18	19	5	23	18	28	4	27	19	28
8	5	55	18	19	5	20	18	30	4	20	19	35
12	5	54	18	19	5	18	18	32	4	13	19	43
16	5	54	18	20	5	16	18	34	4	07	19	47
20	5	54	18	21	5	14	18	35	4	02	19	53
24	5	53	18	21	5	13	18	37	3	57	19	58
28	5	53	18	22	5	12	18	39	3	53	20	03
Jun. 1	5	54	18	23	5	11	18	41	3	49	20	08
5	5	54	18	24	5	11	18	43	3	46	20	12
9	5	54	18	25	5	10	18	44	3	44	20	15
13	5	55	18	26	5	11	18	46	3	43	20	18
17	5	56	18	27	5	11	18	47	3	43	20	20
21	5	57	18	28	5	12	18	48	3	43	20	21
25	5	57	18	29	5	13	18	49	3	44	20	22
29	5	58	18	29	5	14	18	49	3	46	20	21
Jul. 3	5	59	18	30	5	15	18	49	3	49	20	20

Date	Colombo 6°N 56′ (In I.S.T.) L.M.T. Corr.−10m.5				Dhaka 23°N 43′ (In B.S.T.) L.M.T. Corr.+31m.7				London 51°N 32′ (In Z.S.T.) L.M.T. Corr.+0m.3			
	Rise		Set		Rise		Set		Rise		Set	
	h	m	h	m	h	m	h	m	h	m	h	m
Jul. 3	5	59	18	30	5	15	18	49	3	49	20	20
7	6	00	18	30	5	17	18	49	3	52	20	18
11	6	01	18	31	5	18	18	49	3	56	20	15
15	6	02	18	31	5	20	18	48	4	00	20	12
19	6	03	18	31	5	22	18	47	4	05	20	07
23	6	03	18	31	5	24	18	46	4	10	20	02
27	6	04	18	30	5	25	18	44	4	16	19	57
31	6	04	18	29	5	27	18	42	4	22	19	50
Aug. 4	6	04	18	29	5	29	18	40	4	28	19	44
8	6	05	18	28	5	31	18	37	4	34	19	37
12	6	05	18	26	5	32	18	34	4	40	19	30
16	6	05	18	25	5	34	18	31	4	47	19	22
20	6	04	18	23	5	36	18	28	4	53	19	14
24	6	04	18	22	5	37	18	24	4	59	19	05
28	6	04	18	20	5	39	18	21	5	06	18	56
Sep. 1	6	03	18	18	5	40	18	17	5	12	18	47
5	6	03	18	16	5	41	18	13	5	19	18	38
9	6	02	18	14	5	43	18	09	5	25	18	29
13	6	01	18	12	5	44	18	05	5	32	18	20
17	6	01	18	09	5	45	18	01	5	38	18	11
21	6	00	18	07	5	47	17	57	5	44	18	02
25	5	59	18	05	5	48	17	52	5	51	17	53
29	5	59	18	03	5	49	17	48	5	57	17	44
Oct. 3	5	58	18	01	5	51	17	44	6	04	17	35
7	5	58	17	59	5	52	17	40	6	10	17	26
11	5	57	17	57	5	54	17	37	6	17	17	17
15	5	57	17	56	5	56	17	33	6	23	17	08
19	5	57	17	54	5	57	17	29	6	30	16	59
23	5	57	17	53	5	59	17	26	6	37	16	51
27	5	57	17	52	6	01	17	23	6	44	16	43
31	5	58	17	51	6	04	17	20	6	51	16	35
Nov. 4	5	58	17	50	6	06	17	18	6	59	16	28
8	5	59	17	50	6	08	17	16	7	06	16	22
12	6	00	17	49	6	11	17	14	7	13	16	15
16	6	01	17	50	6	13	17	12	7	20	16	10
20	6	02	17	50	6	16	17	11	7	27	16	05
24	6	04	17	50	6	19	17	11	7	33	16	01
28	6	05	17	51	6	22	17	11	7	39	15	57
Dec. 2	6	07	17	52	6	24	17	11	7	45	15	54
6	6	09	17	54	6	27	17	11	7	50	15	52
10	6	11	17	55	6	29	17	12	7	55	15	51
14	6	13	17	57	6	32	17	13	7	59	15	51
18	6	15	17	59	6	34	17	15	8	02	15	52
22	6	17	18	01	6	36	17	17	8	04	15	54
26	6	19	18	03	6	38	17	19	8	05	15	56
30	6	21	18	05	6	40	17	21	8	06	15	59
Jan. 3 (2020)	6	22	18	07	6	41	17	24	8	06	16	03

N.B.—To obtain the times of Sunrise and Sunset in L. M. T. apply the correction of L. M. T. as indicated above for each station.

Local Mean Time of Sunrise and Sunset, 2019

Date	Sunrise										Mid-day		Sunset									
	0°		+10°		+20°		+30°		+35°				0°		+10°		+20°		+30°		+35°	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jan. 0	5	59	6	17	6	35	6	56	7	08	12	03	18	07	17	50	17	32	17	11	16	59
4	6	01	6	18	6	36	6	57	7	09	12	05	18	08	17	52	17	34	17	14	17	01
8	6	03	6	19	6	37	6	57	7	09	12	07	18	10	17	54	17	37	17	17	17	05
12	6	04	6	20	6	37	6	57	7	08	12	09	18	12	17	56	17	39	17	20	17	09
16	6	06	6	21	6	38	6	57	7	08	12	10	18	13	17	58	17	42	17	23	17	12
20	6	07	6	22	6	38	6	56	7	06	12	11	18	14	18	00	17	45	17	27	17	16
24	6	08	6	22	6	37	6	54	7	04	12	12	18	15	18	02	17	47	17	30	17	20
28	6	09	6	22	6	36	6	53	7	02	12	13	18	16	18	03	17	50	17	34	17	25
Feb. 1	6	10	6	22	6	35	6	50	6	59	12	14	18	17	18	05	17	52	17	37	17	29
5	6	10	6	22	6	34	6	48	6	56	12	14	18	17	18	06	17	54	17	41	17	33
9	6	11	6	21	6	32	6	45	6	52	12	14	18	17	18	07	17	56	17	44	17	37
13	6	11	6	20	6	30	6	42	6	48	12	14	18	17	18	08	17	58	17	47	17	41
17	6	10	6	19	6	28	6	38	6	44	12	14	18	17	18	09	18	00	17	50	17	44
21	6	10	6	18	6	26	6	34	6	40	12	13	18	17	18	09	18	02	17	53	17	48
25	6	10	6	16	6	23	6	30	6	35	12	13	18	16	18	10	18	03	17	56	17	52
Mar. 1	6	09	6	14	6	20	6	26	6	30	12	12	18	16	18	10	18	05	17	59	17	55
5	6	08	6	12	6	17	6	22	6	25	12	12	18	15	18	11	18	06	18	02	17	59
9	6	07	6	10	6	14	6	17	6	19	12	11	18	14	18	11	18	08	18	04	18	02
13	6	06	6	08	6	10	6	13	6	14	12	10	18	13	18	11	18	09	18	07	18	06
17	6	05	6	06	6	07	6	08	6	08	12	09	18	12	18	11	18	10	18	09	18	09
21	6	04	6	04	6	04	6	03	6	03	12	07	18	10	18	11	18	11	18	12	18	12
25	6	03	6	02	6	00	5	58	5	57	12	06	18	09	18	11	18	12	18	14	18	15
29	6	02	5	59	5	57	5	54	5	52	12	05	18	08	18	10	18	13	18	16	18	18
Apr. 2	6	00	5	57	5	53	5	48	5	49	12	04	18	07	18	10	18	14	18	19	18	22
6	5	59	5	55	5	50	5	44	5	41	12	03	18	06	18	10	18	15	18	21	18	25
10	5	58	5	53	5	47	5	40	5	35	12	02	18	05	18	10	18	16	18	24	18	28
14	5	57	5	51	5	43	5	35	5	30	12	00	18	04	18	10	18	18	18	26	18	31
18	5	56	5	49	5	40	5	31	5	25	11	59	18	03	18	10	18	19	18	29	18	34
22	5	55	5	47	5	37	5	26	5	19	11	59	18	02	18	11	18	20	18	31	18	38
26	5	55	5	45	5	35	5	22	5	15	11	58	18	01	18	11	18	21	18	34	18	41
30	5	54	5	43	5	32	5	19	5	11	11	57	18	01	18	11	18	23	18	36	18	44
May4	5	54	5	42	5	30	5	15	5	07	11	57	18	00	18	12	18	24	18	39	18	47
8	5	53	5	41	5	27	5	12	5	03	11	56	18	00	18	12	18	26	18	42	18	51
12	5	53	5	40	5	26	5	09	4	59	11	56	18	00	18	13	18	27	18	44	18	54
16	5	53	5	39	5	24	5	06	4	56	11	56	18	00	18	14	18	29	18	47	18	57
20	5	53	5	39	5	23	5	04	4	53	11	57	18	00	18	15	18	31	18	49	19	00
24	5	53	5	38	5	22	5	02	4	51	11	57	18	00	18	16	18	32	18	52	19	03
28	5	54	5	38	5	21	5	01	4	49	11	58	18	01	18	17	18	34	18	54	19	06
Jun. 1	5	54	5	38	5	20	5	00	4	47	11	58	18	01	18	18	18	35	18	56	19	09
5	5	55	5	38	5	20	4	59	4	46	11	59	18	02	18	19	18	37	18	58	19	11
9	5	56	5	39	5	20	4	58	4	46	11	59	18	03	18	20	18	38	19	00	19	13
13	5	56	5	39	5	20	4	58	4	45	12	00	18	04	18	21	18	40	19	02	19	15
17	5	57	5	40	5	21	4	59	4	46	12	01	18	04	18	22	18	41	19	03	19	16
21	5	58	5	41	5	22	4	59	4	46	12	02	18	05	18	23	18	42	19	04	19	17
25	5	59	5	42	5	23	5	00	4	47	12	02	18	06	18	24	18	43	19	05	19	18
29	6	00	5	43	5	24	5	02	4	49	12	03	18	07	18	24	18	43	19	05	19	18
Jul. 3	6	01	5	44	5	25	5	03	4	50	12	04	18	08	18	25	18	43	19	05	19	18

The timings relate to the visibility of the upper limb of the Sun on the horizon, and as such include refraction and limb-correction amounting to a total of about $3\frac{1}{2}$ mins. (3 mins. for 0° or 10° lat., and 4 mins. for 30° or 35° lat.). For this reason the above times have been obtained by *diminishing* the calculated figures by the above amount for sunrise and *increasing* for sunset.

The L.M.T. of rise and set for intermediate latitudes and dates may be obtained by simple proportion. Thereafter, the timings can be converted into I.S.T. by inverse application of the local time correction for the place.

Local Mean Time of Sunrise and Sunset, 2019

Date	Sunrise										Mid-day		Sunset									
	0°		+10°		+20°		+30°		+35°				0°		+10°		+20°		+30°		+35°	
	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
Jul. 3	6	01	5	44	5	25	5	03	4	50	12	04	18	08	18	25	18	43	19	05	19	18
7	6	01	5	45	5	26	5	05	4	52	12	04	18	08	18	25	18	43	19	05	19	17
11	6	02	5	46	5	28	5	07	4	55	12	05	18	09	18	25	18	43	19	04	19	16
15	6	02	5	47	5	29	5	09	4	57	12	05	18	09	18	25	18	43	19	03	19	15
19	6	03	5	47	5	31	5	11	5	00	12	06	18	10	18	25	18	42	19	01	19	13
23	6	03	5	48	5	32	5	14	5	03	12	06	18	10	18	25	18	41	18	59	19	10
27	6	03	5	49	5	34	5	16	5	05	12	06	18	10	18	24	18	39	18	57	19	07
31	6	03	5	50	5	35	5	18	5	08	12	06	18	10	18	23	18	37	18	54	19	04
Aug. 4	6	03	5	50	5	37	5	21	5	11	12	06	18	09	18	22	18	35	18	51	19	00
8	6	02	5	51	5	38	5	23	5	15	12	05	18	09	18	21	18	33	18	48	18	56
12	6	02	5	51	5	39	5	26	5	18	12	05	18	08	18	19	18	31	18	44	18	52
16	6	01	5	51	5	40	5	28	5	21	12	04	18	08	18	17	18	28	18	40	18	48
20	6	00	5	51	5	42	5	30	5	24	12	03	18	07	18	16	18	25	18	36	18	43
24	5	59	5	51	5	43	5	33	5	27	12	02	18	06	18	14	18	22	18	32	18	38
28	5	58	5	51	5	44	5	35	5	30	12	01	18	05	18	11	18	19	18	27	18	32
Sep. 1	5	57	5	51	5	45	5	37	5	33	12	00	18	03	18	09	18	15	18	23	18	27
5	5	56	5	51	5	45	5	39	5	36	11	59	18	02	18	07	18	12	18	18	18	22
9	5	54	5	50	5	46	5	41	5	38	11	58	18	01	18	04	18	08	18	13	18	16
13	5	53	5	50	5	47	5	43	5	41	11	56	17	59	18	02	18	05	18	08	18	10
17	3	52	5	50	5	48	5	46	5	44	11	54	17	58	17	59	18	01	18	03	18	05
21	5	50	5	50	5	49	5	48	5	47	11	53	17	57	17	57	17	58	17	58	17	59
25	5	49	5	49	5	50	5	50	5	50	11	52	17	55	17	55	17	54	17	54	17	53
29	5	47	5	49	5	50	5	52	5	53	11	51	17	54	17	52	17	50	17	49	17	48
Oct. 3	5	46	5	49	5	51	5	54	5	56	11	49	17	53	17	50	17	47	17	44	17	42
7	5	45	5	49	5	52	5	57	5	59	11	48	17	51	17	48	17	44	17	39	17	37
11	5	44	5	49	5	54	5	59	6	02	11	47	17	50	17	45	17	40	17	34	17	31
15	5	43	5	49	5	55	6	02	6	05	11	46	17	49	17	43	17	37	17	30	17	26
19	5	42	5	49	5	56	6	04	6	09	11	45	17	49	17	42	17	34	17	26	17	21
23	5	41	5	49	5	58	6	07	6	12	11	44	17	48	17	40	17	31	17	22	17	16
27	5	41	5	50	5	59	6	10	6	16	11	44	17	48	17	38	17	29	17	18	17	12
31	5	40	5	50	6	01	6	13	6	19	11	44	17	47	17	37	17	26	17	14	17	07
Nov. 4	5	40	5	51	6	03	6	16	6	23	11	44	17	47	17	36	17	24	17	11	17	03
8	5	41	5	52	6	05	6	19	6	27	11	44	17	47	17	35	17	23	17	08	17	00
12	5	41	5	54	6	07	6	22	6	31	11	45	17	48	17	35	17	21	17	06	16	57
16	5	41	5	55	6	09	6	25	6	35	11	45	17	49	17	35	17	20	17	04	16	54
20	5	42	5	56	6	11	6	29	6	39	11	46	17	49	17	35	17	20	17	02	16	52
24	5	43	5	58	6	14	6	32	6	43	11	47	17	50	17	35	17	19	17	01	16	50
28	5	44	6	00	6	16	6	35	6	46	11	48	17	52	17	36	17	19	17	00	16	49
Dec. 2	5	46	6	02	6	19	6	39	6	50	11	49	17	53	17	37	17	20	17	00	16	48
6	5	47	6	04	6	21	6	42	6	53	11	51	17	55	17	38	17	20	17	00	16	48
10	5	49	6	06	6	24	6	45	6	57	11	53	17	56	17	40	17	21	17	01	16	48
14	5	51	6	08	6	26	6	47	7	00	11	54	17	58	17	41	17	23	17	02	16	49
18	5	53	6	10	6	28	6	50	7	02	11	56	18	00	17	43	17	24	17	03	16	51
22	5	55	6	12	6	31	6	52	7	04	11	58	18	02	17	45	17	26	17	05	16	52
26	5	57	6	14	6	32	6	54	7	06	12	00	18	04	17	47	17	29	17	07	16	55
30	5	59	6	16	6	34	6	55	7	08	12	02	18	06	17	49	17	31	17	10	16	57
Jan. 3	6	01	6	17	6	35	6	56	7	08	12	04	18	08	17	51	17	33	17	13	17	00

The timings relate to the visibility of the upper limb of the Sun on the horizon, and as such include refraction and limb-correction amounting to a total of about $3\frac{1}{2}$ mins. (3 mins. for 0° or 10° lat., and 4 mins. for 30° or 35° lat.). For this reason the above times have been obtained by *diminishing* the calculated figures by the above amount for sunrise and *increasing* for sunset.

The L.M.T. of rise and set for intermediate latitudes and dates may be obtained by simple proportion. Thereafter, the timings can be converted into I.S.T. by inverse application of the local time correction for the place.

Moonrise and Moonset, 2019

(Midnight Rule)

Date	Local Mean Time of Moonrise & Moonset *(Upper Limb)* — Latitude 10°N0′ Rise	10°N0′ Set	20°N0′ Rise	20°N0′ Set	30°N0′ Rise	30°N0′ Set	Moonrise & Moonset *(Upper Limb)* in I.S.T. for Certain Stations in India — Chennai 13° N 04′ Rise	Chennai Set	Mumbai 18° N 58′ Rise	Mumbai Set	Kolkata 22° N 35′ Rise	Kolkata Set	Delhi 28° N 39′ Rise	Delhi Set
	h m	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*
Jan. 0	1 15	13 28	1 19	13 22	1 24	13 15	1 26	13 36	1 59	14 02	0 56	12 56	1 46	13 38
1	2 06	14 12	2 14	14 02	2 23	13 52	2 17	14 18	2 53	14 43	1 52	13 36	2 43	14 15
2	2 57	14 57	3 08	14 44	3 21	14 30	3 09	15 03	3 47	15 26	2 47	14 17	3 41	14 54
3	3 48	15 44	4 02	15 29	4 18	15 11	4 01	15 49	4 40	16 10	3 42	15 00	4 38	15 36
4	4 39	16 32	4 55	16 15	5 14	15 56	4 53	16 36	5 34	16 57	4 35	15 46	5 34	16 20
5	5 30	17 21	5 48	17 04	6 08	16 43	5 45	17 25	6 26	17 46	5 28	16 34	6 26	17 08
6	6 20	18 11	6 38	17 54	6 58	17 34	6 35	18 15	7 16	18 35	6 18	17 25	7 17	17 58
7	7 09	19 00	7 26	18 44	7 45	18 25	7 23	19 05	8 04	19 26	7 06	18 15	8 04	18 50
8	7 55	19 49	8 10	19 35	8 28	19 18	8 09	19 54	8 48	20 16	7 50	19 17	8 47	19 43
9	8 39	20 36	8 52	20 25	9 07	20 11	8 52	20 42	9 30	21 06	8 31	19 57	9 26	20 35
10	9 21	21 23	9 31	21 14	9 43	21 04	9 33	21 30	10 09	21 35	9 10	20 48	10 02	21 28
11	10 01	22 09	10 08	22 03	10 16	21 57	10 12	22 16	10 47	22 44	9 46	21 38	10 36	22 19
12	10 40	22 54	19 44	22 52	10 48	22 50	10 50	23 03	11 23	23 33	10 11	22 27	11 09	23 12
13	11 19	23 41	11 20	23 42	11 20	23 44	11 29	23 50	11 59	...	10 56	23 18	11 42	...
14	11 59	...	11 56	...	11 52	...	12 07	...	12 36	0 22	11 31	...	12 14	0 05
15	12 41	0 28	12 34	0 33	12 26	0 39	12 48	0 39	13 15	1 13	12 08	0 10	12 49	1 00
16	13 26	1 18	13 16	1 27	13 04	1 37	13 33	1 30	13 54	2 06	12 49	1 05	13 28	1 58
17	14 15	2 11	14 02	2 24	13 47	2 37	14 20	2 24	14 43	3 03	13 34	2 03	14 10	2 58
18	15 10	3 09	14 53	3 24	14 35	3 41	15 14	3 23	15 36	4 02	14 25	3 04	15 00	4 01
19	16 09	4 09	15 51	4 26	15 31	4 46	16 13	4 24	16 33	5 05	15 22	4 07	15 56	5 05
20	17 12	5 12	16 54	5 30	16 34	5 50	17 16	5 27	17 37	6 08	16 15	5 10	16 59	6 09
21	18 16	6 15	18 00	6 32	17 42	6 51	18 21	6 29	18 42	7 10	17 32	6 12	18 07	7 10
22	19 21	7 15	19 07	7 30	18 52	7 47	19 26	7 29	19 49	8 08	18 39	7 10	19 16	8 06
23	20 22	8 12	20 12	8 23	20 02	8 36	20 28	8 24	20 54	9 02	19 46	8 02	20 25	8 56
24	21 21	9 05	21 15	9 12	21 09	9 21	21 29	9 16	21 56	9 51	20 49	8 50	21 32	9 41
25	22 16	9 54	22 15	9 57	22 14	10 01	22 16	10 04	22 56	10 37	21 51	9 34	22 36	10 22
26	23 10	10 41	23 13	10 40	23 16	10 39	23 20	10 50	23 53	11 20	22 49	10 15	23 38	11 01
27	...	11 26	...	11 21	...	11 16	...	11 34	...	12 01	23 47	10 56	...	11 38
28	0 02	12 11	0 09	12 02	0 17	11 53	0 13	12 17	0 48	12 43	...	11 36	0 37	12 15
29	0 54	12 56	1 04	12 44	1 16	12 30	1 06	13 02	1 43	13 25	0 42	12 17	1 36	12 54
30	1 45	13 42	1 58	13 28	2 13	13 11	1 58	13 47	2 37	14 09	1 38	13 00	2 33	13 35
31	2 36	14 29	2 51	14 13	3 10	13 54	2 50	14 34	3 30	14 55	2 31	13 45	3 29	14 18
Feb.1	3 27	15 18	3 44	15 00	4 04	14 40	3 41	15 22	4 22	15 42	3 25	14 31	4 22	15 05
2	4 16	16 07	4 34	15 50	4 55	15 29	4 31	16 11	5 12	16 31	4 15	15 21	5 14	15 54
3	5 05	16 56	5 23	16 39	5 43	16 20	5 20	17 01	6 01	17 22	5 03	16 11	6 01	16 45
4	5 52	17 45	6 08	17 30	6 26	17 13	6 06	17 50	6 46	18 12	5 48	17 02	6 45	17 37
5	6 36	18 33	6 50	18 20	7 06	18 06	6 50	18 39	7 29	19 02	6 30	17 53	7 26	18 30
6	7 19	19 20	7 31	19 10	7 43	18 59	7 32	19 27	8 09	19 51	7 10	18 43	8 03	19 23
7	8 00	20 06	8 08	19 59	8 17	19 52	8 11	20 13	8 47	20 40	7 47	19 34	8 37	20 15
8	8 39	20 52	8 44	20 48	8 50	20 44	8 50	21 00	9 24	21 29	8 21	20 23	9 11	21 07
9	9 18	21 37	9 20	21 38	9 22	21 38	9 28	21 47	9 59	22 17	8 56	21 13	9 43	22 00
10	9 57	22 23	9 55	22 27	9 53	22 31	10 06	22 34	10 35	23 07	9 31	22 04	10 15	22 53
11	10 37	23 11	10 32	23 19	10 25	23 27	10 45	23 23	11 12	23 58	10 06	22 56	10 48	23 48
12	11 20	...	11 11	...	11 01	...	11 27	...	11 52	...	10 44	23 51	11 24	...
13	12 06	0 01	11 54	0 12	11 40	0 24	12 11	0 14	12 34	0 51	11 26	...	12 03	0 45
14	12 56	0 55	12 41	1 09	12 23	1 25	13 01	1 08	13 23	1 48	12 12	0 48	12 48	1 45
15	13 51	1 52	13 34	2 08	13 14	2 26	13 55	2 06	14 15	2 46	13 05	1 48	13 39	2 46

N.B. —The timings for 10°, 20° & 30° Lat. which are given in L.M.T. relate to the visibility of the upper limb of the Moon on the horizon of the Central Meridian of India ($82\frac{1}{2}$° E).

Moonrise and Moonset, 2019

Date	Local Mean Time of Moonrise & Moonset *(Upper Limb)* — Latitude 10°N0′ Rise	10°N0′ Set	20°N0′ Rise	20°N0′ Set	30°N0′ Rise	30°N0′ Set	Moonrise & Moonset *(Upper Limb)* in I.S.T. for Certain Stations in India — Chennai 13° N 04′ Rise	Chennai Set	Mumbai 18° N 58′ Rise	Mumbai Set	Kolkata 22° N 35′ Rise	Kolkata Set	Delhi 28° N 39′ Rise	Delhi Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
Feb.16	14 50	2 51	14 32	3 09	14 11	3 30	14 54	3 06	15 15	3 48	14 03	2 50	14 36	3 49
17	15 53	3 53	15 36	4 10	15 16	4 31	15 57	4 07	16 18	4 49	15 07	3 51	15 41	4 50
18	16 57	4 54	16 42	5 10	16 24	5 29	17 02	5 08	17 24	5 49	16 13	4 50	16 49	5 48
19	18 00	5 53	17 49	6 06	17 35	6 21	18 06	6 06	18 30	6 45	17 21	5 46	17 59	6 41
20	19 02	6 48	18 54	6 58	18 45	7 09	19 09	7 01	19 36	7 37	18 27	6 36	19 09	7 29
21	20 01	7 41	19 57	7 46	19 54	7 52	20 09	7 52	20 38	8 25	19 32	7 24	20 16	8 13
22	20 57	8 30	20 58	8 31	21 00	8 32	21 07	8 20	21 39	9 11	20 34	8 07	21 22	8 54
23	21 52	9 18	21 57	9 15	22 03	9 11	22 03	9 26	22 37	9 55	21 35	8 50	22 24	9 33
24	22 46	10 04	22 55	9 57	23 05	9 49	22 58	10 11	23 34	10 38	22 33	9 32	23 26	10 12
25	23 39	10 51	23 51	10 40	...	10 28	23 32	10 57	...	11 21	23 31	10 13	...	10 51
26	...	11 38	...	11 24	0 05	11 09	...	11 43	0 30	12 06	...	10 56	0 25	11 33
27	0 31	12 26	0 46	12 10	1 04	11 52	0 45	12 30	1 25	12 51	0 26	11 42	1 23	12 16
28	1 23	13 15	1 40	12 57	1 59	12 37	1 37	13 19	2 18	13 39	1 20	12 28	2 18	13 02
Mar.1	2 13	14 04	2 31	13 46	2 51	13 26	2 28	14 08	3 09	14 28	2 12	13 17	3 10	13 50
2	3 02	14 53	3 20	14 35	3 40	14 16	3 37	14 57	3 58	15 18	3 01	14 07	3 59	14 40
3	3 50	15 42	4 06	15 26	4 25	15 08	4 04	15 47	4 44	16 08	3 47	14 58	4 44	15 33
4	4 35	16 30	4 49	16 16	5 06	16 01	4 48	16 35	5 28	16 58	4 29	15 49	5 26	16 25
5	5 18	17 17	5 30	17 07	5 44	16 54	5 31	17 24	6 08	17 48	5 09	16 39	6 03	17 18
6	5 59	18 04	6 08	17 56	6 19	17 47	6 11	18 11	6 47	18 37	5 47	17 30	6 39	18 10
7	6 39	18 49	6 45	18 45	6 52	18 40	6 50	18 58	7 24	19 26	6 22	18 20	7 13	19 03
8	7 17	19 35	7 21	19 35	7 24	19 34	7 28	19 44	8 00	20 14	6 57	19 10	7 45	19 56
9	7 57	20 21	7 56	20 24	7 55	20 27	8 06	20 31	8 36	21 04	7 32	20 01	8 17	20 49
10	8 37	21 09	8 32	21 15	8 27	21 23	8 45	21 20	9 13	21 54	8 07	20 53	8 50	21 43
11	9 19	21 58	9 11	22 07	9 01	22 19	9 26	22 10	9 51	22 46	8 44	21 46	9 25	22 39
12	10 03	22 49	9 51	23 02	9 39	23 17	10 08	23 02	10 32	23 41	9 24	22 41	10 02	23 37
13	10 50	23 43	10 35	23 59	10 19	...	10 55	23 57	11 17	...	10 08	23 39	10 43	...
14	11 42	...	11 25	...	11 06	0 17	11 46	...	12 07	0 37	10 56	...	11 31	0 36
15	12 37	0 40	12 19	0 57	11 59	1 17	12 41	0 54	13 01	1 36	11 50	0 38	12 23	1 37
16	13 36	1 39	13 18	1 56	12 58	2 17	13 40	1 53	14 01	2 34	12 49	1 37	13 23	2 36
17	14 37	2 37	14 21	2 55	14 02	3 14	14 42	2 52	15 03	3 33	13 52	2 35	14 27	3 34
18	15 40	3 36	15 26	3 51	15 11	4 07	15 45	3 50	16 08	4 29	14 58	3 31	15 35	4 27
19	16 41	4 31	16 31	4 43	16 20	4 56	16 47	4 44	17 13	5 22	16 04	4 22	16 43	5 16
20	17 41	5 25	17 35	5 33	17 29	5 41	17 49	5 36	18 16	6 11	17 09	5 10	17 52	6 01
21	18 39	6 15	18 38	6 18	18 36	6 22	18 48	6 25	19 18	6 58	18 13	5 56	18 59	6 44
22	19 36	7 04	19 39	7 03	19 43	7 02	19 46	7 13	20 19	7 44	19 16	6 39	20 04	7 24
23	20 31	7 53	20 39	7 47	20 47	7 41	20 43	8 00	21 18	8 27	20 16	7 22	21 08	8 04
24	21 27	8 40	21 38	8 31	21 51	8 20	21 39	8 47	22 16	9 12	21 17	8 04	22 10	8 44
25	22 21	9 29	22 35	9 16	22 51	9 02	22 34	9 35	23 14	9 57	22 15	8 48	23 11	9 26
26	23 15	10 18	23 31	10 02	23 50	9 45	23 29	10 22	...	10 44	23 11	9 34	...	10 09
27	...	11 08	...	10 50	...	10 30	...	11 12	0 09	11 32	...	10 21	0 09	10 55
28	0 07	11 58	0 24	11 40	0 45	11 19	0 21	12 02	1 03	12 21	0 05	11 11	1 04	11 44
29	0 57	12 48	1 16	12 30	1 36	12 09	1 12	12 52	1 54	13 12	0 56	12 01	1 55	12 34
30	1 46	13 37	2 03	13 21	2 23	13 02	2 00	13 42	2 41	14 02	1 44	12 52	2 42	13 26
31	2 32	14 26	2 47	14 11	3 05	13 55	2 46	14 31	3 26	14 53	2 27	13 43	3 25	14 19

N.B. —To calculate the times of Moonrise and Moonset for Kolkata and eastern India *subtract* 1 minute in the times of L.M.T. and for Delhi, Mumbai, Chennai etc. and western India *add* 1 minute to get the corrected L.M.T. for the required Meridian.

Moonrise and Moonset, 2019

Date	Local Mean Time of Moonrise & Moonset (Upper Limb)						Moonrise & Moonset (Upper Limb) in I.S.T. for Certain Stations in India							
	Latitude						Chennai		Mumbai		Kolkata		Delhi	
	10°N0′		20°N0′		30°N0′		13° N 04′		18° N 58′		22° N 35′		28° N 39′	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
Apr. 1	3 16	15 14	3 29	15 01	3 44	14 48	3 29	15 19	4 07	15 43	3 09	14 34	4 03	15 12
2	3 58	16 00	4 08	15 51	4 19	15 41	4 10	16 07	4 46	16 32	3 47	15 25	4 39	16 04
3	4 38	16 46	4 45	16 40	4 53	16 34	4 49	16 54	5 24	17 21	4 23	16 15	5 14	16 57
4	5 17	17 32	5 21	17 30	5 25	17 28	5 28	17 41	6 00	18 10	4 58	17 05	5 46	17 50
5	5 57	18 18	5 57	18 20	5 57	18 22	6 06	18 28	6 36	19 00	5 33	17 56	6 18	18 43
6	6 36	19 06	6 33	19 11	6 29	19 17	6 44	19 17	7 13	19 51	6 08	18 48	6 51	19 39
7	7 18	19 55	7 11	20 04	7 03	20 14	7 25	20 07	7 51	20 43	6 45	19 42	7 26	20 34
8	8 01	20 46	7 51	20 58	7 39	21 12	8 07	20 59	8 31	21 37	7 24	20 37	8 02	21 33
9	8 48	21 40	8 34	21 55	8 18	22 12	8 53	21 53	9 16	22 33	8 06	21 35	8 42	22 31
10	9 38	22 35	9 22	22 52	9 03	23 12	9 43	22 50	10 03	23 31	8 53	22 33	9 28	23 32
11	10 31	23 33	10 14	23 51	9 54	...	10 35	23 47	10 56	...	9 45	23 31	10 18	...
12	11 29	...	11 10	...	10 49	0 11	11 33	...	11 53	0 29	10 41	...	11 15	0 30
13	12 27	0 30	12 10	0 48	11 51	1 08	12 32	0 44	12 52	1 26	11 41	0 28	12 15	1 27
14	13 28	1 27	13 13	1 43	12 55	2 01	13 33	1 41	13 54	2 21	12 44	1 23	13 30	2 20
15	14 27	2 21	14 15	2 34	14 02	2 49	14 33	2 34	14 57	3 13	13 48	2 14	14 26	3 09
16	15 26	3 14	15 18	3 23	15 09	3 34	15 33	3 26	15 59	4 02	14 51	3 02	15 32	3 54
17	16 22	4 03	16 19	4 09	16 15	4 15	16 31	4 14	17 00	4 48	15 54	3 47	16 38	4 36
18	17 19	4 52	17 20	4 53	17 22	4 55	17 29	5 02	18 00	5 33	16 56	4 29	17 43	5 16
19	18 15	5 40	18 20	5 37	18 26	5 33	18 26	5 48	19 00	6 17	17 58	5 12	18 48	5 55
20	19 11	6 28	19 20	6 20	19 31	6 12	19 33	6 35	19 59	7 01	18 58	5 54	19 52	6 35
21	20 06	7 16	20 19	7 05	20 34	6 52	20 29	7 22	20 58	7 46	19 59	6 38	20 54	7 16
22	21 02	8 06	21 18	7 52	21 36	7 35	21 16	8 11	21 56	8 33	20 57	7 24	21 55	7 59
23	21 56	8 57	22 13	8 40	22 34	8 20	22 10	9 01	22 52	9 22	21 54	8 11	22 53	8 45
24	22 49	9 48	23 07	9 30	23 28	9 09	23 04	9 52	23 45	10 12	22 48	9 01	23 47	9 34
25	23 39	10 39	23 57	10 21	...	10 00	23 54	10 43	...	11 03	23 38	9 52	...	10 25
26	...	11 30	...	11 13	0 17	10 52	...	11 34	0 35	11 55	...	10 43	0 36	11 17
27	0 27	12 19	0 43	12 04	1 02	11 46	0 41	12 24	1 22	12 45	0 24	11 36	1 22	12 10
28	1 12	13 08	1 27	12 54	1 43	12 39	1 26	13 13	2 04	13 36	1 06	12 27	2 02	13 04
29	1 55	13 55	2 06	13 45	2 19	13 33	2 07	14 01	2 45	14 25	1 46	13 18	2 39	13 56
30	2 35	14 41	2 44	14 34	2 54	14 26	2 47	14 48	3 23	15 15	2 22	14 08	3 14	14 49
May 1	3 15	15 27	3 20	15 24	3 26	15 19	3 26	15 35	3 59	16 04	2 57	14 58	3 47	15 42
2	3 54	16 13	3 56	16 13	3 57	16 13	4 04	16 22	4 35	16 53	3 32	15 49	4 18	16 35
3	4 33	17 00	4 31	17 04	4 29	17 09	4 42	17 11	5 11	17 44	4 07	16 41	4 51	17 30
4	5 14	17 49	5 09	17 57	5 02	18 05	5 22	18 00	5 49	18 36	4 43	17 35	5 25	18 26
5	5 58	18 40	5 48	18 51	5 38	19 04	6 04	18 53	6 29	19 30	5 22	18 30	6 01	19 24
6	6 43	19 34	6 31	19 48	6 16	20 05	6 49	19 48	7 12	20 27	6 03	19 28	6 40	20 24
7	7 34	20 30	7 18	20 47	7 00	21 06	7 38	20 44	8 00	21 26	6 49	20 27	7 25	21 26
8	8 27	21 28	8 09	21 46	7 49	22 07	8 31	21 43	8 51	22 24	7 41	21 27	8 14	22 26
9	9 24	22 26	9 05	22 44	8 44	23 05	9 28	22 41	9 48	23 23	8 36	22 25	9 09	23 24
10	10 22	23 23	10 05	23 40	9 44	23 59	10 26	23 28	10 47	...	9 36	23 20	10 09	...
11	11 22	...	11 06	...	10 47	...	11 27	...	11 48	0 18	10 37	...	11 12	0 18
12	12 20	0 17	12 07	0 32	11 53	0 48	12 26	0 31	12 49	1 10	11 40	0 12	12 17	1 08
13	13 18	1 09	13 09	1 21	12 58	1 33	13 25	1 22	13 50	1 59	12 42	0 59	13 22	1 53
14	14 14	1 59	14 08	2 06	14 03	2 14	14 21	2 10	14 49	2 45	13 43	1 44	14 25	2 34
15	15 09	2 46	15 08	2 49	15 07	2 52	15 18	2 56	15 48	3 29	14 43	2 25	15 29	3 14

N.B. —From the corrected L. M. T. calculate for the exact latitude of the required place by interpolation when the place is between 10° N. and 30° N. and by extrapolation when the place falls outside 10° N. or 30° N. Lat.

Date	Local Mean Time of Moonrise & Moonset *(Upper Limb)* — Latitude 10°N0′ Rise	10°N0′ Set	20°N0′ Rise	20°N0′ Set	30°N0′ Rise	30°N0′ Set	Moonrise & Moonset *(Upper Limb)* in I.S.T. for Certain Stations in India — Chennai 13° N 04′ Rise	Chennai Set	Mumbai 18° N 58′ Rise	Mumbai Set	Kolkata 22° N 35′ Rise	Kolkata Set	Delhi 28° N 39′ Rise	Delhi Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
May16	16 03	3 33	16 06	3 31	16 10	3 30	16 13	3 41	16 46	4 11	15 43	3 07	16 32	3 52
17	16 58	4 19	17 05	4 13	17 14	4 07	17 09	4 26	17 45	4 54	16 43	3 48	17 35	4 29
18	17 53	5 06	18 04	4 56	18 17	4 46	18 05	5 13	18 43	5 38	17 43	4 30	18 37	5 09
19	18 48	5 55	19 03	5 42	19 20	5 27	19 02	6 00	19 42	6 23	18 42	5 14	19 39	5 51
20	19 44	6 45	20 00	6 29	20 20	6 11	19 58	6 49	20 38	7 11	19 41	6 01	20 39	6 35
21	20 37	7 37	20 56	7 19	21 17	6 58	20 52	7 41	21 34	8 01	20 36	6 50	21 36	7 23
22	21 30	8 28	21 48	8 10	22 09	7 49	21 45	8 32	22 26	8 52	21 29	7 41	22 28	8 14
23	22 19	9 21	22 37	9 02	22 57	8 41	22 34	9 25	23 15	9 45	22 17	8 33	23 16	9 06
24	23 06	10 11	23 22	9 55	23 40	9 35	23 20	10 15	...	10 36	23 02	9 26	23 59	10 00
25	23 50	11 01	...	10 46	...	10 29	...	11 06	0 01	11 28	23 43	10 18	...	10 54
26	...	11 48	0 03	11 37	0 18	11 23	0 03	11 54	0 41	12 18	...	11 09	0 37	11 47
27	0 31	12 35	0 42	12 26	0 53	12 16	0 44	12 41	1 21	13 07	0 20	12 00	1 13	12 40
28	1 12	13 21	1 18	13 16	1 26	13 10	1 23	13 28	1 57	13 56	0 56	12 50	1 47	13 33
29	1 51	14 06	1 54	14 04	1 57	14 03	2 01	14 15	2 33	14 45	1 31	13 40	2 18	14 25
30	2 29	14 52	2 29	14 54	2 28	14 57	2 38	15 02	3 09	15 35	2 05	14 31	2 50	15 19
31	3 09	15 40	3 05	15 46	3 00	15 53	3 17	15 51	3 45	16 25	2 40	15 54	3 23	16 14
Jun. 1	3 51	16 30	3 44	16 40	3 35	16 51	3 58	16 42	4 24	17 19	3 17	16 18	3 57	17 12
2	4 36	17 24	4 24	17 37	4 12	17 52	4 42	17 37	5 06	18 15	3 58	17 16	4 35	18 11
3	5 25	18 19	5 10	18 35	4 54	18 54	5 30	18 34	5 52	19 14	4 42	18 15	5 18	19 14
4	6 18	19 18	6 01	19 36	5 42	19 57	6 22	19 33	6 43	20 14	5 32	19 17	6 06	20 16
5	7 15	20 18	6 57	20 36	6 35	20 58	7 19	20 33	7 39	21 15	6 27	20 17	7 01	21 17
6	8 15	21 17	7 57	21 35	7 36	21 55	8 19	21 32	8 39	22 13	7 27	21 16	8 01	22 14
7	9 16	22 14	8 59	22 29	8 39	22 47	9 20	22 28	9 41	23 08	8 30	22 09	9 04	23 06
8	10 16	23 07	10 02	23 20	9 46	23 34	10 21	23 20	10 43	23 58	9 34	22 59	10 10	23 53
9	11 14	23 57	11 03	...	10 51	...	11 20	...	11 45	...	10 36	23 44	11 15	...
10	12 10	...	12 03	0 06	11 56	0 15	12 17	0 09	12 44	0 45	11 38	...	12 19	0 35
11	13 04	0 44	13 02	0 49	12 59	0 54	13 13	0 55	13 43	1 29	12 37	0 26	13 22	1 15
12	13 58	1 31	14 00	1 31	14 02	1 31	14 07	1 40	14 39	2 10	13 36	1 07	14 23	1 52
13	14 51	2 15	14 57	2 11	15 04	2 07	15 02	2 23	15 37	2 52	14 34	1 47	15 25	2 09
14	15 44	3 01	15 54	2 53	16 06	2 44	15 57	3 08	16 33	3 34	15 33	2 27	16 26	3 07
15	16 38	3 48	16 52	3 37	17 07	3 23	16 52	3 54	17 31	4 17	16 31	3 09	17 27	3 47
16	17 33	4 36	17 49	4 22	18 08	4 05	17 47	4 41	18 27	5 03	17 29	3 54	18 27	4 29
17	18 27	5 27	18 45	5 10	19 06	4 50	18 42	5 32	19 24	5 52	18 26	4 41	19 25	5 15
18	19 21	6 18	19 39	6 00	20 00	5 40	19 36	6 22	20 17	6 42	19 20	5 31	20 19	6 04
19	20 11	7 11	20 29	6 52	20 50	6 31	20 26	7 15	21 08	7 35	20 10	6 23	21 09	6 56
20	21 00	8 02	21 17	7 45	21 36	7 25	21 14	8 07	21 55	8 27	20 57	7 16	21 54	7 50
21	21 45	8 53	21 59	8 37	22 15	8 19	21 59	8 57	22 37	9 19	21 39	8 09	22 35	8 44
22	22 27	9 42	22 39	9 29	22 52	9 14	22 40	9 47	23 18	10 10	22 18	9 01	23 12	9 38
23	23 08	10 28	23 16	10 18	23 26	10 07	23 20	10 35	23 55	11 00	22 35	9 52	23 46	10 30
24	23 47	11 14	23 52	11 08	23 57	11 00	23 58	11 21	...	11 49	23 29	10 42	...	11 23
25	...	11 59	...	11 56	...	11 53	...	12 08	0 31	12 36	...	11 32	0 18	12 15
26	0 25	12 45	0 26	12 45	0 28	12 46	0 35	12 54	1 06	13 26	0 03	12 21	0 49	13 08
27	1 04	13 31	1 02	13 36	0 59	13 41	1 13	13 42	1 42	14 15	0 37	13 13	1 21	14 02
28	1 45	14 19	1 39	14 27	1 32	14 36	1 52	14 31	2 18	15 07	1 13	14 05	1 54	14 57
29	2 27	15 11	2 17	15 22	2 07	15 36	2 34	15 24	2 58	16 01	1 51	15 01	2 30	15 56
30	3 14	16 05	3 01	16 20	2 46	16 37	3 19	16 19	3 42	16 59	2 33	16 00	3 10	16 56

N.B. —The L. M. T. thus obtained for the latitude of the place may now be converted into I.S.T. by inverse application of the local time correction for the place.

Moonrise and Moonset, 2019

Date	Local Mean Time of Moonrise & Moonset (*Upper Limb*)								Moonrise & Moonset (*Upper Limb*) in I.S.T. for Certain Stations in India							
	Latitude								Chennai		Mumbai		Kolkata		Delhi	
	10°N 0′		20°N 0′		30°N 0′				13°N 04′		18°N 58′		22°N 35′		28°N 39′	
	Rise	Set	Rise	Set	Rise	Set			Rise	Set	Rise	Set	Rise	Set	Rise	Set
	h m	h m	h m	h m	h m	h m			h m	h m	h m	h m	h m	h m	h m	h m
Jul. 1	4 05	17 03	3 49	17 20	3 31	17 40			4 09	17 18	4 30	17 59	3 21	17 01	3 55	17 59
2	5 01	18 03	4 43	18 22	4 22	18 43			5 05	18 18	5 25	19 00	4 13	18 02	4 47	19 02
3	6 00	19 04	5 42	19 23	5 21	19 44			6 04	19 19	6 24	20 01	5 13	19 03	5 46	20 02
4	7 03	20 04	6 45	20 20	6 24	20 39			7 07	20 18	7 28	20 59	6 16	20 01	6 50	20 59
5	8 05	21 00	7 50	21 14	7 32	21 30			8 10	21 14	8 32	21 53	7 21	20 53	7 57	21 49
6	9 06	21 53	8 54	22 03	8 40	22 14			9 12	22 05	9 36	22 44	8 26	21 42	9 04	22 34
7	10 04	22 42	9 57	22 48	9 47	22 55			10 11	22 53	10 37	23 28	9 30	22 26	10 11	23 16
8	11 00	23 30	10 57	23 31	10 52	23 33			11 09	23 39	11 38	...	10 31	23 07	11 15	23 54
9	11 55	...	11 55	...	11 56	...			12 04	...	12 35	0 10	11 31	23 48	12 18	...
10	12 47	0 15	12 52	0 12	12 58	0 09			12 58	0 23	13 32	0 52	12 29	...	13 19	0 31
11	13 40	1 00	13 49	0 53	13 59	0 45			13 52	1 07	14 28	1 34	13 27	0 27	14 20	1 08
12	14 33	1 46	14 46	1 35	15 00	1 23			14 46	1 52	15 25	2 16	14 25	1 08	15 20	1 47
13	15 27	2 33	15 42	2 19	16 00	2 03			15 41	2 38	16 20	3 01	15 22	1 51	16 19	2 27
14	16 20	3 22	16 38	3 06	16 58	2 47			16 35	3 27	17 16	3 47	16 18	2 37	17 17	3 11
15	17 14	4 12	17 32	3 55	17 53	3 34			17 29	4 16	18 10	4 36	17 13	3 26	18 12	3 59
16	18 05	5 04	18 23	4 45	18 44	4 24			18 20	5 08	19 01	5 28	18 04	4 16	19 03	4 49
17	18 54	5 56	19 12	5 38	19 31	5 17			19 09	5 59	19 50	6 19	18 52	5 09	19 50	5 42
18	19 41	6 46	19 56	6 30	20 13	6 11			19 55	6 51	20 34	7 12	19 36	6 01	20 32	6 35
19	20 24	7 36	20 37	7 22	20 51	7 05			20 37	7 41	21 15	8 03	20 16	6 53	21 11	7 30
20	21 05	8 23	21 15	8 12	21 26	7 59			21 18	8 29	21 54	8 53	20 53	7 45	21 46	8 23
21	21 45	9 09	21 51	9 02	21 58	8 52			21 56	9 17	22 29	9 43	21 29	8 35	22 18	9 16
22	22 23	9 55	22 25	9 50	22 28	9 45			22 33	10 02	23 05	10 30	22 02	9 25	22 49	10 08
23	23 01	10 39	23 00	10 38	22 59	10 37			23 10	10 48	23 40	11 19	22 36	10 14	23 21	11 00
24	23 40	11 25	23 35	11 28	23 30	11 31			23 48	11 35	...	12 07	23 10	11 04	23 53	11 52
25	...	12 11	...	12 17	...	12 25			...	12 22	0 15	12 57	23 46	11 55	...	12 46
26	0 20	13 00	0 12	13 10	0 03	13 21			0 27	13 12	0 53	13 49	...	12 48	0 26	13 42
27	1 04	13 52	0 53	14 05	0 39	14 20			1 10	14 05	1 34	14 43	0 25	13 44	1 03	14 40
28	1 52	14 47	1 38	15 03	1 21	15 22			1 57	15 01	2 19	15 42	1 09	14 43	1 45	15 41
29	2 45	15 45	2 27	16 03	2 08	16 24			2 49	16 00	3 10	16 41	1 59	15 44	2 33	16 43
30	3 42	16 46	3 24	17 05	3 03	17 26			3 46	17 01	4 06	17 43	2 54	16 45	3 28	17 45
31	4 43	17 47	4 25	18 04	4 04	18 24			4 47	18 02	5 08	18 43	3 56	17 45	4 29	18 43
Aug. 1	5 47	18 46	5 31	19 01	5 11	19 19			5 52	19 00	6 12	19 40	5 01	18 41	5 36	19 38
2	6 50	19 42	6 36	19 54	6 21	20 07			6 56	19 55	7 19	20 32	6 08	19 33	6 45	20 27
3	7 52	20 34	7 42	20 42	7 31	20 50			7 58	20 46	8 23	21 21	7 15	20 20	7 55	21 11
4	8 50	21 24	8 45	21 27	8 39	21 31			8 58	21 34	9 26	22 06	8 19	21 04	9 02	21 52
5	9 47	22 11	9 46	22 10	9 45	22 08			9 56	22 20	10 26	22 50	9 22	21 46	10 07	22 30
6	10 42	22 58	10 45	22 52	10 50	22 46			10 52	23 05	11 26	23 33	10 22	22 26	11 11	23 08
7	11 36	23 44	11 44	23 35	11 53	23 24			11 48	23 51	12 23	...	11 22	23 08	12 13	23 47
8	12 29	...	12 41	...	12 54	...			12 42	...	13 20	0 15	12 20	23 51	13 15	...
9	13 23	0 31	13 38	0 18	13 55	0 03			13 37	0 36	14 16	0 59	13 18	...	14 14	0 27
10	14 16	1 20	14 33	1 04	14 53	0 46			14 31	1 24	15 12	1 46	14 14	0 35	15 12	1 10
11	15 10	2 09	15 28	1 52	15 49	1 32			15 25	2 13	16 06	2 33	15 09	1 23	16 08	1 56
12	16 01	3 00	16 19	2 41	16 41	2 20			16 16	3 04	16 58	3 24	16 00	2 12	17 00	2 45
13	16 51	3 51	17 08	3 33	17 29	3 12			17 05	3 55	17 47	4 15	16 49	3 04	17 48	3 37
14	17 38	4 41	17 54	4 24	18 12	4 05			17 52	4 46	18 31	5 07	17 34	3 56	18 31	4 30
15	18 22	5 31	18 35	5 17	18 51	4 59			18 35	5 36	19 14	5 58	18 15	4 48	19 10	5 24

N.B. —The timings for 10°, 20° & 30° Lat. which are given in L.M.T. relate to the visibility of the upper limb of the Moon on the horizon of the Central Meridian of India ($82\frac{1}{2}$° E).

Moonrise and Moonset, 2019

Date	Local Mean Time of Moonrise & Moonset *(Upper Limb)* — Latitude 10°N0′ Rise	Set	20°N0′ Rise	Set	30°N0′ Rise	Set	Moonrise & Moonset *(Upper Limb)* in I.S.T. for Certain Stations in India — Chennai 13°N 04′ Rise	Set	Mumbai 18°N 58′ Rise	Set	Kolkata 22°N 35′ Rise	Set	Delhi 28°N 39′ Rise	Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
Aug16	19 04	6 19	19 14	6 07	19 26	5 53	19 16	6 25	19 53	6 48	18 53	5 40	19 46	6 17
17	19 44	7 06	19 51	6 57	19 59	6 46	19 55	7 13	20 29	7 38	19 29	6 30	20 19	7 10
18	20 22	7 52	20 25	7 46	20 30	7 40	20 32	7 59	21 05	8 26	20 03	7 20	20 51	8 02
19	21 00	8 36	21 00	8 34	21 00	8 31	21 09	8 45	21 40	9 14	20 36	8 09	21 22	8 54
20	21 38	9 21	21 35	9 23	21 31	9 24	21 46	9 31	22 14	10 02	21 10	8 59	21 53	9 46
21	22 17	10 06	22 10	10 11	22 02	10 17	22 24	10 17	22 51	10 51	21 45	9 49	22 25	10 38
22	22 59	10 53	22 48	11 02	22 36	11 12	23 05	11 05	23 30	11 41	22 21	10 40	23 00	11 33
23	23 44	11 43	23 30	11 55	23 15	12 08	23 49	11 55	...	12 33	23 02	11 34	23 39	12 28
24	...	12 34	...	12 50	23 58	13 07	...	12 48	0 11	13 28	23 48	12 29	...	13 27
25	0 32	13 30	0 16	13 48	...	14 07	0 37	13 45	0 58	14 26	...	13 28	0 22	14 26
26	1 27	14 28	1 08	14 47	0 47	15 08	1 31	14 43	1 51	15 25	0 39	14 27	1 13	15 27
27	2 24	15 28	2 06	15 47	1 45	16 07	2 28	15 43	2 48	16 24	1 37	15 27	2 09	16 26
28	3 26	16 27	3 08	16 44	2 48	17 03	3 31	16 42	3 51	17 23	2 39	16 24	3 13	17 23
29	4 29	17 25	4 14	17 39	3 56	17 54	4 34	17 39	4 56	18 17	3 45	17 18	4 21	18 14
30	5 32	18 20	5 20	18 29	5 07	18 40	5 38	18 32	6 02	19 09	4 52	18 08	5 31	19 01
31	6 33	19 12	6 25	19 17	6 17	19 23	6 40	19 23	7 07	19 57	5 59	18 54	6 40	19 44
Sep. 1	7 33	20 02	7 30	20 02	7 26	20 03	7 41	20 11	8 10	20 42	7 04	19 39	7 49	20 24
2	8 30	20 50	8 31	20 46	8 33	20 41	8 40	20 58	9 12	21 26	8 08	20 11	8 55	21 04
3	9 27	21 38	9 33	21 30	9 40	21 21	9 38	21 45	10 12	22 10	9 10	21 03	10 01	21 44
4	10 22	22 26	10 32	22 14	10 44	22 01	10 34	22 32	11 11	22 55	10 11	21 47	11 04	22 24
5	11 17	23 15	11 31	23 00	11 47	22 43	11 31	23 20	12 10	23 42	11 10	22 32	12 06	23 07
6	12 12	...	12 28	23 48	12 47	23 29	12 26	...	13 07	...	12 08	23 20	13 07	23 53
7	13 06	0 05	13 24	...	13 45	...	13 21	0 09	14 02	0 30	13 05	...	14 03	...
8	13 58	0 56	14 16	0 38	14 38	0 16	14 13	1 00	14 55	1 20	13 58	0 09	14 57	0 41
9	14 48	1 48	15 06	1 29	15 27	1 08	15 03	1 52	15 44	2 11	14 47	1 00	15 46	1 33
10	15 36	2 38	15 52	2 20	16 11	2 00	15 50	2 42	16 30	3 03	15 33	1 52	16 30	2 25
11	16 20	3 28	16 35	3 12	16 51	2 54	16 34	3 33	17 13	3 54	16 15	2 44	17 11	3 19
12	17 03	4 16	17 15	4 03	17 28	3 48	17 16	4 22	17 53	4 45	16 54	3 36	17 47	4 12
13	17 43	5 03	17 52	4 53	18 01	4 42	17 55	5 10	18 30	5 35	17 30	4 26	18 21	5 05
14	18 22	5 49	18 27	5 53	18 32	5 35	18 32	5 57	19 06	6 23	18 04	5 17	18 53	5 58
15	19 00	6 34	19 01	6 31	19 03	6 27	19 10	6 42	19 41	7 11	18 37	6 06	19 24	6 50
16	19 38	7 19	19 36	7 20	19 33	7 20	19 47	7 28	20 15	7 59	19 11	6 55	19 55	7 42
17	20 16	8 04	20 11	8 08	20 04	8 13	20 24	8 14	20 51	8 48	19 45	7 45	20 26	8 34
18	20 57	8 50	20 48	8 58	20 37	9 07	21 04	9 02	21 29	9 37	20 21	8 36	21 00	9 28
19	21 40	9 38	21 28	9 50	21 13	10 02	21 46	9 51	22 09	10 28	21 00	9 29	21 37	10 22
20	22 26	10 28	22 11	10 43	21 54	10 59	22 31	10 42	22 53	11 22	21 43	10 22	22 18	11 19
21	23 17	11 22	23 00	11 39	22 39	11 58	23 21	11 36	23 42	12 17	22 30	11 19	23 04	12 17
22	...	12 17	23 53	12 35	23 32	12 57	...	12 32	...	13 14	23 24	12 16	23 57	13 16
23	0 12	13 15	...	13 33	...	13 55	0 15	13 30	0 35	14 11	...	13 14	...	14 13
24	1 10	14 12	0 51	14 30	0 30	14 50	1 14	14 27	1 34	15 08	0 22	14 10	0 55	15 09
25	2 11	15 09	1 54	15 25	1 35	15 42	2 15	15 23	2 36	16 03	1 25	15 04	1 59	16 01
26	3 12	16 04	2 58	16 16	2 42	16 29	3 18	16 17	3 40	16 54	2 30	15 55	3 07	16 49
27	4 13	16 57	4 03	17 04	3 52	17 13	4 19	17 08	4 45	17 44	3 36	16 42	4 16	17 34
28	5 13	17 47	5 08	17 50	5 02	17 54	5 21	17 58	5 49	18 30	4 42	17 27	5 25	18 15
29	6 12	18 36	6 11	18 35	6 10	18 33	6 21	18 45	6 51	19 15	5 47	18 10	6 32	18 55
30	7 10	19 26	7 14	19 20	7 19	19 13	7 21	19 33	7 54	20 00	6 50	18 54	7 40	19 36

N.B. —To calculate the times of Moonrise and Moonset for Kolkata and eastern India *subtract* 1 minute and for Delhi, Mumbai, Chennai etc. and western India *add* 1 minute to get the corrected L.M.T. for the required Meridian.

Date	Local Mean Time of Moonrise & Moonset (*Upper Limb*)								Moonrise & Moonset (*Upper Limb*) in I.S.T. for Certain Stations in India							
	Latitude								Chennai		Mumbai		Kolkata		Delhi	
	10°N 0′		20°N 0′		30°N0′				13°N 04′		18°N 58′		22°N 35′		28°N 39′	
	Rise		Set		Rise		Set		Rise	Set	Rise	Set	Rise	Set	Rise	Set
	h m	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*	*h m*
Oct. 1	8 07	20 15	8 16	20 05	8 25	19 53			8 19	20 21	8 55	20 46	7 54	19 38	8 46	20 16
2	9 05	21 06	9 17	20 52	9 32	20 36			9 18	21 11	9 56	21 33	8 56	20 24	9 52	21 00
3	10 02	21 57	10 17	21 41	10 35	21 22			10 15	22 02	10 56	22 22	9 57	21 12	10 55	21 46
4	10 58	22 49	11 16	22 31	11 36	22 10			11 12	22 53	11 54	23 13	10 56	22 02	11 55	22 35
5	11 52	23 42	12 11	23 23	12 32	23 01			12 07	23 46	12 49	...	11 52	22 54	12 51	23 27
6	12 44	...	13 03	...	13 24	23 54			12 59	...	13 41	0 05	12 43	23 46	13 43	...
7	13 33	0 33	13 50	0 15	14 10	...			13 48	0 37	14 28	0 57	13 31	...	14 29	0 19
8	14 19	1 24	14 34	1 08	14 52	0 48			14 32	1 29	15 12	1 50	14 14	0 39	15 11	1 13
9	15 02	2 13	15 15	1 59	15 29	1 43			15 15	2 18	15 53	2 40	14 54	1 31	15 49	2 07
10	15 43	3 00	15 52	2 49	16 03	2 36			15 55	3 06	16 31	3 31	15 31	2 22	16 23	3 00
11	16 21	3 47	16 28	3 39	16 34	3 30			16 33	3 54	17 07	4 19	16 05	3 12	16 55	3 53
12	17 00	4 31	17 02	4 27	17 05	4 22			17 10	4 39	17 42	5 08	16 39	4 02	17 27	4 45
13	17 38	5 17	17 37	5 16	17 36	5 15			17 47	5 26	18 16	5 56	17 13	4 51	17 57	5 37
14	18 16	6 02	18 11	6 05	18 06	6 08			18 24	6 12	18 52	6 44	17 47	5 42	18 28	6 29
15	18 57	6 48	18 48	6 55	18 38	7 02			19 03	6 59	19 29	7 34	18 12	6 32	19 02	7 23
16	19 39	7 36	19 27	7 46	19 14	7 58			19 45	7 48	20 08	8 25	19 00	7 25	19 38	8 18
17	20 24	8 25	20 09	8 39	19 53	8 55			20 29	8 39	20 51	9 18	19 42	8 18	20 17	9 15
18	21 14	9 18	20 56	9 34	20 36	9 53			21 18	9 32	21 38	10 12	20 27	9 15	21 01	10 12
19	22 06	10 12	21 48	10 30	21 26	10 51			22 10	10 27	22 29	11 09	21 18	10 11	21 51	11 11
20	23 02	11 08	22 43	11 27	22 21	11 49			23 06	11 23	23 26	12 05	22 13	11 08	22 46	12 08
21	...	12 04	23 42	12 22	23 22	12 44			...	12 19	...	13 01	23 13	12 03	23 47	13 03
22	0 00	13 00	...	13 16	...	13 35			0 04	13 44	0 24	13 55	...	12 56	...	13 54
23	0 59	13 53	0 44	14 07	0 26	14 22			1 04	14 06	1 26	14 45	0 15	13 47	0 51	14 42
24	1 58	14 45	1 47	14 54	1 33	15 06			2 04	14 57	2 28	15 34	1 19	14 33	1 57	15 26
25	2 57	15 35	2 49	15 40	2 40	15 46			3 04	15 46	3 30	16 19	2 22	15 18	3 03	16 07
26	3 54	16 23	3 51	16 24	3 48	16 25			4 03	16 33	4 32	17 04	3 26	16 00	4 10	16 46
27	4 51	17 12	4 53	17 08	4 55	17 04			5 01	17 20	5 34	17 48	4 29	16 43	5 17	17 26
28	5 49	18 01	5 55	17 53	6 02	17 43			6 00	18 08	6 35	18 33	5 33	17 27	6 23	18 06
29	6 47	18 51	6 57	18 39	7 10	18 25			6 59	18 57	7 37	19 21	6 36	18 12	7 30	18 49
30	7 45	19 44	7 59	19 28	8 16	19 10			7 59	19 49	8 38	20 10	7 39	19 00	8 35	19 35
31	8 43	20 37	9 01	20 19	9 20	19 59			8 58	20 41	9 39	21 01	8 41	19 50	9 40	20 23
Nov. 1	9 41	21 32	9 59	21 12	10 21	20 50			9 55	21 35	10 37	21 54	9 40	20 43	10 39	21 15
2	10 35	22 25	10 54	22 06	11 16	21 44			10 50	22 28	11 32	22 48	10 35	21 37	11 35	22 09
3	11 27	23 17	11 45	22 59	12 06	22 39			11 42	23 21	12 23	23 42	11 26	22 30	12 24	23 04
4	12 14	...	12 31	23 52	12 50	23 34			12 28	...	13 09	...	12 11	23 24	13 09	23 59
5	12 59	0 07	13 13	...	13 29	...			13 13	0 12	13 51	0 33	12 53	...	13 48	...
6	13 41	0 56	13 52	0 43	14 04	0 28			13 53	1 01	14 30	1 25	13 31	0 15	14 24	0 53
7	14 20	1 42	14 28	1 33	14 36	1 22			14 32	1 49	15 07	2 14	14 06	1 06	14 57	1 46
8	14 59	2 27	15 03	2 22	15 07	2 15			15 09	2 35	15 42	3 02	14 39	1 56	15 28	2 38
9	15 37	3 13	15 37	3 10	15 37	3 08			15 46	3 21	16 16	3 51	15 13	2 45	15 59	3 30
10	16 15	3 57	16 11	3 59	16 07	4 01			16 23	4 07	16 51	4 39	15 47	3 36	16 29	4 22
11	16 54	4 43	16 47	4 49	16 39	4 55			17 02	4 54	17 28	5 28	16 21	4 26	17 02	5 16
12	17 37	5 31	17 26	5 40	17 13	5 51			17 43	5 43	18 06	6 19	16 59	5 19	17 37	6 11
13	18 21	6 21	18 07	6 33	17 51	6 48			18 26	6 34	18 49	7 12	17 40	6 12	18 15	7 08
14	19 10	7 13	18 53	7 29	18 34	7 47			19 14	7 27	19 35	8 07	18 24	7 09	18 59	8 06
15	20 02	8 08	19 44	8 26	19 22	8 46			20 06	8 22	20 25	9 04	19 15	8 06	19 47	9 05

N.B.—From the corrected L.M.T. calculate for the exact latitude of the place by interpolation when the place is between 10° N. and 30° N. and by extrapolation when the place falls outside 10° N. or 30° N. Lat.

Moonrise and Moonset, 2019

Date	Local Mean Time of Moonrise & Moonset (Upper Limb) — Latitude 10°N 0′ Rise	10°N 0′ Set	20°N 0′ Rise	20°N 0′ Set	30°N 0′ Rise	30°N 0′ Set	Moonrise & Moonset (Upper Limb) in I.S.T. for Certain Stations in India — Chennai 13°N 04′ Rise	Chennai Set	Mumbai 18°N 58′ Rise	Mumbai Set	Kolkata 22°N 35′ Rise	Kolkata Set	Delhi 28°N 39′ Rise	Delhi Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
Nov. 16	20 58	9 04	20 38	9 23	20 16	9 45	21 01	9 19	21 21	10 01	20 09	9 04	20 41	10 04
17	21 55	10 01	21 37	10 19	21 16	10 41	21 59	10 15	22 29	10 58	21 07	10 01	21 41	11 00
18	22 53	10 56	22 37	11 14	22 18	11 34	22 58	11 11	23 19	11 52	22 08	10 54	22 43	11 53
19	23 51	11 49	23 38	12 04	23 23	12 21	23 57	12 03	...	12 42	23 10	11 44	23 47	12 40
20	...	12 40	...	12 51	...	13 04	...	12 53	0 19	13 30	...	12 30	...	13 24
21	0 48	13 29	0 38	13 56	0 28	13 44	0 55	13 40	1 20	14 15	0 12	13 14	0 51	14 04
22	1 44	14 15	1 39	14 18	1 33	14 21	1 52	14 26	2 19	14 58	1 13	13 55	1 56	14 43
23	2 39	15 02	2 38	15 01	2 38	14 59	2 48	15 11	3 19	15 41	2 14	14 36	3 00	15 21
24	3 35	15 50	3 39	15 44	3 43	15 37	3 45	15 57	4 18	16 24	3 15	15 18	4 04	15 59
25	4 30	16 38	4 39	16 28	4 49	16 16	4 42	16 44	5 19	17 09	4 17	16 01	5 10	16 39
26	5 28	17 29	5 41	17 15	5 55	16 59	5 41	17 35	6 19	17 57	5 20	16 47	6 15	17 23
27	6 26	18 22	6 42	18 05	7 00	17 46	6 40	18 26	7 21	18 07	6 22	17 37	7 20	18 10
28	7 25	19 17	7 43	18 58	8 04	18 36	7 39	19 11	8 21	19 40	7 24	18 28	8 22	19 01
29	8 21	20 12	8 40	19 53	9 03	19 30	8 36	20 15	9 19	20 34	8 21	19 13	9 22	19 55
30	9 16	21 06	9 35	20 47	9 57	20 26	9 31	21 10	10 12	21 30	9 16	20 18	10 15	20 51
Dec. 1	10 06	21 58	10 24	21 42	10 44	21 23	10 21	22 03	11 02	22 23	10 04	21 13	11 03	21 47
2	10 53	22 48	11 09	22 34	11 26	22 18	11 07	22 53	11 47	23 16	10 48	22 06	11 45	22 42
3	11 37	23 36	11 49	23 25	12 03	23 13	11 50	23 42	12 27	...	11 29	22 58	12 22	23 37
4	12 17	...	12 26	...	12 36	...	12 29	...	13 05	0 06	12 05	23 49	12 57	...
5	12 56	0 22	13 01	0 14	13 08	0 06	13 07	0 29	13 41	0 55	12 39	...	13 29	0 29
6	13 34	1 07	13 36	1 03	13 38	0 59	13 44	1 15	14 15	1 44	13 12	0 38	13 59	1 21
7	14 11	1 51	14 09	1 51	14 07	1 51	14 20	2 01	14 49	2 31	13 45	1 27	14 29	2 13
8	14 50	2 36	14 44	2 40	14 38	2 44	14 58	2 47	15 25	3 10	14 19	2 17	15 01	3 06
9	15 31	3 23	15 22	3 31	15 11	3 39	15 38	3 35	16 02	4 10	14 55	3 09	15 34	4 00
10	16 14	4 12	16 02	4 23	15 48	4 36	16 20	4 24	16 43	5 02	15 35	4 02	16 11	4 56
11	17 02	5 04	16 46	5 18	16 28	5 35	17 07	5 18	17 28	5 57	16 18	4 58	16 53	5 55
12	17 54	5 58	17 36	6 15	17 15	6 35	17 58	6 13	18 18	6 54	17 07	5 56	17 40	6 54
13	18 50	6 55	18 30	7 15	18 08	7 36	18 53	7 11	19 13	7 53	18 01	6 55	18 33	7 55
14	19 48	7 54	19 29	8 13	19 07	8 35	19 52	8 09	20 11	8 51	19 00	7 54	19 33	8 54
15	20 48	8 51	20 30	9 09	20 10	9 30	20 52	9 06	21 13	9 48	20 01	8 50	20 35	9 49
16	21 47	9 46	21 33	10 02	21 16	10 20	21 52	10 00	22 14	10 40	21 04	9 42	21 40	10 39
17	22 44	10 38	22 33	10 51	22 11	11 05	22 50	10 51	23 15	11 30	22 06	10 30	22 45	11 25
18	23 30	11 28	23 34	11 36	23 26	11 46	23 47	11 39	...	12 15	23 07	11 14	23 49	12 06
19	...	12 14	...	12 18	...	12 23	...	12 24	0 14	12 58	...	11 56	...	12 44
20	0 34	13 00	0 32	12 59	0 29	12 59	0 43	13 09	1 13	13 19	0 07	12 35	0 52	13 21
21	1 28	13 45	1 30	13 41	1 33	13 36	1 38	13 53	2 10	14 21	1 07	13 15	1 55	13 58
22	2 22	14 31	2 28	14 22	2 36	14 13	2 33	14 38	3 08	15 04	2 06	13 56	2 57	14 36
23	3 17	15 20	3 28	15 07	3 41	14 53	3 30	15 26	4 07	15 49	3 06	14 40	4 01	15 17
24	4 13	16 10	4 27	15 55	4 44	15 37	4 27	16 15	5 06	16 36	4 07	15 27	5 04	16 01
25	5 10	17 04	5 28	16 45	5 48	16 24	5 25	17 08	6 06	17 28	5 08	16 16	6 07	16 49
26	6 07	17 58	6 26	17 39	6 48	17 17	6 22	18 02	7 05	18 21	6 07	17 10	7 07	17 42
27	7 03	18 53	7 23	18 34	7 45	18 12	7 18	18 57	8 00	19 17	7 04	18 05	8 03	18 37
28	7 56	19 47	8 14	19 30	8 35	19 09	8 10	19 51	8 52	20 11	7 55	19 00	8 54	19 34
29	8 45	20 38	9 01	20 23	9 20	20 06	8 59	20 43	9 40	21 05	8 42	19 55	9 39	20 13
30	9 31	21 28	9 44	21 16	10 00	21 02	9 44	21 34	10 22	21 57	9 24	20 48	10 19	21 26
31	10 12	22 15	10 23	22 06	10 35	21 56	10 25	22 21	11 02	22 47	10 02	21 40	10 55	22 19
32	10 52	23 00	10 59	22 55	11 07	22 49	11 04	23 08	11 38	23 36	10 37	22 29	11 28	23 12

N.B.—The L.M.T. thus obtained for the latitude of the place may now be converted into I.S.T. by inverse application of the local time correction for the place.

Method for Calculation of Sunrise, Sunset and Moonrise, Moonset times from the Tables given in this Ephemeris.

Sunrise & Sunset

Example : To find the times of Sunrise and Sunset in I.S.T at **Hyderabad** on May 12, 2019 from the given table of Local Mean Time of Sunrise & Sunset.

Place : **Hyderabad** : Latitude = 17° N 26' = 10°+ 7°26' = 10°+ 7.43°
Interpolation factor for the Latitude = .743 for 1° difference
Longitude = 78° E 27'
Correction to obtain I.S.T. from L.M.T = (+) 16m 12s = (+) 16.2m

The latitude of Hyderabad is 17° N 26' which lies between 10° & 20° North Latitude.
The time of Sunrise and Sunset for Lat. 17°N 26' on May 12 would be as follows :

Sunrise in L.M.T.			
Latitude	+ 10°	+ 20°	*Diff.*
May 12 =	$5^h\,40^m$	$5^h\,26^m$	-14^m
Sunrise in L.M.T. = $5^h\,40^m$ (–) (.743× 14^m)			
= $5^h\,40^m$ (–) 10.4^m		=	$5^h\,29.6^m$
Corr. to obtain I.S.T.		=	$+\,16.2^m$
Sunrise in I.S.T. (upper limb)		=	$5^h\,45.8^m$
(rounded to minute)		=	$5^h\,46^m$

Sunset in L.M.T.			
Latitude	+ 10°	+ 20°	*Diff.*
May 12 =	$18^h\,13^m$	$18^h\,27^m$	$+14^m$
Sunset in L.M.T. = $18^h\,13^m$ (+) (.743 × 14^m)			
= 18^h13^m (+) 10.4^m		=	$18^h23.4^m$
Corr. to obtain I.S.T.		=	$+\,16.2^m$
Sunset in I.S.T. (upper limb)		=	$18^h39.6^m$
(rounded to minute)		=	$18^h\,40^m$

Sun rises at $5^h\,46^m$ and sets at $18^h\,40^m$ at Hyderabad on May 12, 2019.

Moonrise & Moonset

Example : To find the times of Moonrise and Moonset in I.S.T at **Delhi** on April 21, 2019 from the given table of Local Mean Time of Moonrise and Moonset.

Place : **Delhi** : Latitude = 28°N 39' = 20°+ 8°39' = 20°+ 8.65°
Interpolation factor for the Latitude = .865 for 1° difference
Longitude = 77° E 13'
Correction to obtain I.S.T. from L.M.T = + 21m 08s = + 21.1m

The latitude of Delhi is 28°N 39' which lies between 20° & 30° North Latitude.
The time of Moonrise and Moonset for lat. 28°N 39' on April 21, would be as follows :

Moonrise in L.M.T.			
Latitude	+ 20°	+ 30°	*Diff.*
April 21 =	$20^h\,19^m$	$20^h\,34^m$	$+15^m$
Moonrise in L.M.T.= 20^h19^m (+) (.865 × 15^m)			
= $20^h\,19^m$ (+) 13.0^m		=	$20^h\,32.0^m$
Corr. to obtain I.S.T		=	(+) 21.1^m
Moonrise in I. S. T. (upper limb)		=	$20^h\,53.1^m$
(rounded to minute)		=	$20^h\,53^m$

Moonset in L.M.T.			
Latitude	+ 20°	+ 30°	*Diff.*
April 21 =	$7^h\,05^m$	$6^h\,52^m$	-13^m
Moonset in L.M.T. = $7^h\,05^m$ (–) (.865 × 13^m)			
= $7^h\,05^m$ (–) 11.2^m		=	$6^h\,53.8^m$
Corr. to obtain I.S.T		=	(+) 21.1^m
Moonset in I. S. T. (upper limb)		=	$7^h\,14.9^m$
(rounded to minute)		=	$7^h\,15^m$

Moon rises at $20^h\,53^m$ and sets at $7^h\,15^m$ at Delhi on April 21, 2019.

* - For greater accuracy a correction of 1 minute for the Meridian of the place is required to be taken and the same is to be *subtracted* for places in eastern India and 1 minute to be *added* for places in western India.

Solar Return or *Varsapraves*

The moment in each year when the nirayana or sidereal longitude of the Sun becomes equal to the longitude of Sun at the time of birth of the native is the moment of Solar return or *Varsapravesh.*

Short method of calculation :- Wirte down the day of week at birth (*0 for Saturday, 1 for Sunday, etc.)* and with it write the birth time reckoned from *6h* a.m. or 0^h midnight or in any other system of time reckoning. Take from the following table the figures given against the age of the person (completed number of years) and add to the above. The result gives the day of week and the time of *Varsapravesh.* The English date for the table below may differ by a few minutes from that obtained from equality of longitudes of the Sun at the two epochs, this being due to the perturbations of Sun's longitude caused by the planets. Actually calculation of equality of longitude of Sun will give the exact time of *Varsapravesh.*

Year	*d*	*h*	*m*	Year	*d*	*h*	*m*	Year	*d*	*h*	*m*
1	1	6	9.2	41	2	12	15.7	81	3	18	22.1
2	2	12	18.3	42	3	18	24.8	82	5	0	31.3
3	3	18	27.5	43	5	0	34.0	83	6	6	40.5
4	5	0	36.6	44	6	6	43.1	84	0	12	49.6
5	6	6	45.8	45	0	12	52.3	85	1	18	58.8
6	0	12	55.0	46	1	19	1.5	86	3	1	8.0
7	1	19	4.1	47	3	1	10.6	87	4	7	17.1
8	3	1	13.3	48	4	7	19.8	88	5	13	26.3
9	4	7	22.5	49	5	13	29.0	89	6	19	35.4
10	5	13	31.6	50	6	19	38.1	90	1	1	44.6
11	6	19	40.8	51	1	1	47.3	91	2	7	53.8
12	1	1	49.9	52	2	7	56.4	92	3	14	2.9
13	2	7	59.1	53	3	14	5.6	93	4	20	12.1
14	3	14	8.3	54	4	20	14.8	94	6	2	21.3
15	4	20	17.4	55	6	2	23.9	95	0	8	30.4
16	6	2	26.6	56	0	8	33.1	96	1	14	39.6
17	0	8	35.8	57	1	14	42.3	97	2	20	48.7
18	1	14	44.9	58	2	20	51.4	98	4	2	57.9
19	2	20	54.1	59	4	3	0.6	99	5	9	7.1
20	4	3	3.2	60	5	9	9.7	100	6	15	16.2
21	5	9	12.4	61	6	15	18.9	101	0	21	25.4
22	6	15	21.6	62	0	21	28.1	102	2	3	34.5
23	0	21	30.7	63	2	3	37.2	103	3	9	43.7
24	2	3	39.9	64	3	9	46.4	104	4	15	52.8
25	3	9	49.1	65	4	15	55.6	105	5	22	2.0
26	4	15	58.2	66	5	22	4.7	106	0	4	11.2
27	5	22	7.4	67	0	4	13.9	107	1	10	20.3
28	0	4	16.5	68	1	10	23.0	108	2	16	29.5
29	1	10	25.7	69	2	16	32.2	109	3	22	38.7
30	2	16	34.9	70	3	22	41.4	110	5	4	47.8
31	3	22	44.0	71	5	4	50.5	111	6	10	57.0
32	5	4	53.2	72	6	10	59.7	112	0	17	6.1
33	6	11	2.4	73	0	17	8.9	113	1	23	15.3
34	0	17	11.5	74	1	23	18.0	114	3	5	24.5
35	1	23	20.7	75	3	5	27.2	115	4	11	33.6
36	3	5	29.8	76	4	11	36.3	116	5	17	42.8
37	4	11	39.0	77	5	17	45.5	117	6	23	52.0
38	5	17	48.2	78	6	23	54.7	118	1	6	1.1
39	6	23	57.3	79	1	6	3.8	119	2	12	10.3
40	1	6	6.5	80	2	12	13.0	120	3	18	19.4

Example : A child is born on May 03,1992, Sunday at *11h 30m* I.S.T, What will be the moment of solar return on May 03, 2019. Weekday on May 03, 1992 was Sunday viz. (= 1). Completed number of years of the nativity is 27. As per above Table, against the year 27, we get *5d 22h 07m*. Adding to the May 03. 1992 which is Sunday (= 1), we get the weekday (1 + 5 = 6) which becomes Friday and adding *22h 07m*, to birthtime *11h 30m*, we get *9h 37m* on May 04, 2019, Saturday which is the time of ***Varsapravesh*** (Actual time is *9h 37m*).

ASTOTTARI DASA — Krittikadi & Ardradi

Balance of Astottari Dasa by longitude of Moon at birth

Nakshatra	Long. of Moon s	°	'	Krittikadi Dasa	y	m	d	Ardradi Dasa	y	m	d
1 Asvini	0	0	00	Venus	10	6	0	Rahu	6	0	0
					5	3	0		3	0	0
2 Bharani	0	13	20								
3 Krittika	0	26	40	Sun	6	0	0	Venus	21	0	0
					4	0	0		14	0	0
4 Rohini	1	10	00		2	0	0		7	0	0
5 Mrigasiras	1	23	20	Moon	15	0	0	Sun	6	0	0
6 Ardra	2	6	40		11	3	0		4	6	0
7 Punarvasu	2	20	00		7	6	0		3	0	0
8 Pusya	3	3	20		3	9	0		1	6	0
9 Aslesa	3	16	40								
10 Magha	4	0	00	Mars	8	0	0	Moon	15	0	0
11 P.Phalguni	4	13	20		5	4	0		10	0	0
12 U.Phalguni	4	26	40		2	8	0		5	0	0
13 Hasta	5	10	00	Mercury	17	0	0	Mars	8	0	0
14 Citra	5	23	20		12	9	0		6	0	0
15 Svati	6	6	40		8	6	0		4	0	0
16 Visakha	6	20	00		4	3	0		2	0	0
17 Anuradha	7	3	20	Saturn	10	0	0	Mercury	17	0	0
18 Jyestha	7	16	40		6	8	0		11	4	0
19 Mula	8	0	00		3	4	0		5	8	0
20 Purvasadha	8	13	20	Jupiter	19	0	0	Saturn	10	0	0
21 Uttarasadha	8	26	40		12	8	0		6	8	0
22 Sravana	9	10	00		6	4	0		3	4	0
23 Dhanistha	9	23	20	Rahu	12	0	0	Jupiter	19	0	0
24 Satabhisaj	10	6	40		8	0	0		12	8	0
25 P.Bhadrapada	10	20	00		4	0	0		6	4	0
26 U.Bhadrapada	11	3	20	Veuns	21	0	0	Rahu	12	0	0
27 Revati	11	16	40		15	9	0		9	0	0
1 Asvini	0	0	00		10	6	0		6	0	0

ASTOTTARI DASA — Krittikadi

Proportional Parts for Dasa of Planets

Krittikadi **(To be subtracted from the balance of dasa given)**

Long of Moon °	'	Sun (6y) m	d	Moon (15y) m	d	Mars (8y) m	d	Mercury (17y) m	d	Saturn (10y) m	d	Jupiter (19y) m	d	Rahu (12y) m	d	Venus (21y) m	d
0	10	0	9	0	17	0	12	0	19	0	15	0	29	0	18	0	24
1	00	1	24	3	11	2	12	3	25	3	0	5	21	3	18	4	22
2	00	3	18	6	23	4	24	7	19	6	0	11	12	7	6	9	13
3	00	5	12	10	4	7	6	11	14	9	0	17	3	10	24	14	05
4	00	7	6	13	15	9	18	15	9	12	0	22	24	14	12	18	27
5	00	9	0	16	26	12	0	19	14	15	0	28	15	18	0	23	19
6	00	10	24	20	8	14	12	22	29	18	0	34	6	21	18	28	11
7	00	12	18	23	19	16	24	26	23	21	10	39	27	25	6	33	2
8	00	14	12	27	0	19	6	30	18	24	0	45	18	28	24	37	24
9	00	16	6	30	12	12	18	34	13	27	0	51	9	52	12	42	16
10	00	18	0	33	23	24	0	28	8	30	0	57	0	36	0	47	8
11	00	19	24	37	5	26	12	42	3	33	0	62	21	39	18	51	29
12	0	21	18	40	15	28	24	45	27	36	0	68	12	43	6	56	21
13	00	23	12	43	27	31	6	49	22	39	0	74	3	46	24	61	13
13	20	24	0	45	0	32	0	51	0	40	0	76	0	48	0	63	0
Nakshatras		3,4,5		6,7,8,9		10,11,12		13,14,15,16		17,18,19		20,21,22		23,24,25		26,27,1,2	

Proportional Parts for Dasa of Planets (Krittikadi)

(To be subtracted from the balance of dasa given)

Long of Moon	Sun (6y)		Moon (15y)		Mars (8y)		Mercury (17y)		Saturn (10y)		Jupiter (19y)		Rahu (12y)		Venus (21y)	
'	m	d	m	d	m	d	m	d	m	d	m	d	m	d	m	d
1	0	1	0	2	0	1	0	2	0	2	0	3	0	2	0	2
2	0	2	0	3	0	2	0	4	0	3	0	6	0	4	0	5
3	0	3	0	5	0	4	0	6	0	5	0	9	0	5	0	7
4	0	4	0	7	0	5	0	8	0	6	0	11	0	7	0	9
5	0	5	0	8	0	6	0	10	0	8	0	14	0	9	0	12
6	0	5	0	10	0	7	0	11	0	9	0	17	0	11	0	14
7	0	6	0	12	0	8	0	13	0	11	0	20	0	13	0	17
8	0	7	0	14	0	10	0	15	0	12	0	23	0	15	0	19
9	0	8	0	15	0	11	0	17	0	14	0	26	0	16	0	21
10	0	9	0	17	0	12	0	19	0	15	0	29	0	18	0	24
15	0	14	0	25	0	18	0	29	0	23	1	13	0	27	1	6
20	0	18	0	34	0	24	0	38	1	0	1	27	1	6	1	17

ASTOTTARI DASA — Ardradi

Proportional Parts for Dasa of Planets

Ardradi

(To be subtracted from the balance of dasa given)

Long of Moon		Sun (6y)		Moon (15y)		Mars (8y)		Mercury (17y)		Saturn (10y)		Jupiter (19y)		Rahu (12y)		Venus (21y)	
°	'	m	d	m	d	m	d	m	d	m	d	m	d	m	d	m	d
0	10	0	7	0	23	0	9	0	26	0	15	0	29	0	14	1	02
1	00	1	10	4	15	1	24	5	3	3	0	5	21	2	21	6	9
2	00	2	22	9	0	3	18	10	6	6	0	11	12	5	12	12	18
3	00	4	2	13	15	5	12	15	9	9	0	17	3	8	3	18	27
4	00	5	12	18	0	7	6	20	12	12	0	22	24	10	24	25	6
5	00	6	23	22	15	9	0	25	15	15	0	28	15	13	15	31	15
6	00	8	3	27	0	10	24	30	18	18	0	34	6	16	6	37	24
7	00	9	13	31	15	12	18	35	21	21	0	39	27	18	27	44	3
8	00	10	24	36	0	14	12	40	24	24	0	45	18	21	18	50	12
9	00	12	5	40	15	16	6	45	27	27	0	51	9	24	9	56	21
10	00	13	15	45	0	18	0	52	0	30	0	57	0	27	0	63	0
11	0	14	26	49	15	19	24	56	3	33	0	62	21	29	21	69	9
12	00	16	6	54	0	21	18	61	6	36	0	68	12	32	12	75	18
13	00	17	16	58	15	23	12	66	9	39	0	74	3	35	3	81	27
13	20	18	0	60	0	24	0	68	0	40	0	76	0	36	0	84	0
Nakshatras		6,7,8,9		10,11,12		13,14,15,16		17,18,19		20,21,22		23,24,25		26,27,1,2		3,4,5	

Proportional Parts for Dasa of Planets (Ardradi)

(To be subtracted from the balance of dasa given)

Long of Moon	Sun (6y)		Moon (15y)		Mars (8y)		Mercury (17y)		Saturn (10y)		Jupiter (19y)		Rahu (12y)		Venus (21y)	
'	m	d	m	d	m	d	m	d	m	d	m	d	m	d	m	d
1	0	1	0	2	0	1	0	3	0	2	0	3	0	1	0	3
2	0	1	0	5	0	2	0	5	0	3	0	6	0	3	0	6
3	0	2	0	7	0	3	0	8	0	5	0	9	0	4	0	9
4	0	3	0	9	0	4	0	10	0	6	0	11	0	5	0	13
5	0	3	0	11	0	5	0	13	0	8	0	14	0	7	0	16
6	0	4	0	14	0	5	0	15	0	9	0	17	0	8	0	19
7	0	5	0	16	0	6	0	18	0	11	0	20	0	9	0	22
8	0	5	0	18	0	7	0	20	0	12	0	23	0	11	0	25
9	0	6	0	20	0	8	0	23	0	14	0	26	0	12	0	28
10	0	7	0	23	0	9	0	26	0	15	0	29	0	14	1	2
15	0	10	1	4	0	14	1	9	0	23	1	13	0	21	1	17
20	0	14	1	15	0	18	1	21	1	0	1	27	0	27	2	3

ASTOTTARI DASA AND ANTAR DASA

Antardasa	Sun (Ravi)—6						Moon (Chandra)—15						Mars (Mangala)—8							
	Sub Periods			Total			Sub Periods			Total			Sub Periods				Total			
	y	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*h*	*y*	*m*	*d*	*h*
Sun	0	4	8	0	4	0		—			—			—				—		
Moon	0	10	0	1	2	0	2	1	0	2	1	0		—				—		
Mars	0	5	10	1	7	10	1	1	10	3	2	10	0	7	3	8	0	7	3	8
Mercury	0	11	10	2	6	20	2	4	10	5	6	20	1	3	3	8	1	10	6	16
Saturn	0	6	20	3	1	10	1	4	20	6	11	10	0	8	26	16	2	7	3	8
Jupiter	1	0	20	4	2	0	2	7	20	9	7	0	1	4	26	16	4	0	0	0
Rahu	0	8	0	4	10	0	1	8	0	11	3	0	0	10	20	0	4	10	20	0
Venus	1	2	0	6	0	0	2	11	0	14	2	0	1	6	20	0	6	5	10	0
Sun		—			—		0	10	0	15	0	0	0	5	10	0	6	10	20	00
Moon		—			—			—			—		1	1	10	0	8	0	0	0

Antardasa	Mercury (Budha)—17								Saturn (Sani)—10							
	Sub Periods				Total				Sub Periods				Total			
	y	*m*	*d*	*h*	*y*	*m*	*d*	*h*	*y*	*m*	*d*	*h*	*y*	*m*	*d*	*h*
Mercury	2	8	3	8	2	8	3	8		—				—		
Suturn	1	6	26	16	4	3	0	0	0	11	3	8	0	11	3	8
Jupiter	2	11	26	16	7	2	26	16	1	9	3	8	2	8	6	16
Rahu	1	10	20	0	9	1	16	16	1	1	10	0	3	9	16	16
Venus	3	3	20	0	12	5	16	16	1	11	10	0	5	8	26	16
Sun	0	11	10	0	13	4	16	16	0	6	20	0	6	3	16	16
Moon	2	4	10	0	15	8	26	16	1	4	20	0	7	8	6	16
Mars	1	3	3	8	17	0	0	0	0	8	26	16	8	5	3	8
Mercury		—				—			1	6	26	16	10	0	0	0

Antardasa	Jupiter (Brihaspati)—19								Rahu—12						Venus (Sukra)—21					
	Sub Periods				Total				Sub Periods			Total			Sub Periods			Total		
	y	*m*	*d*	*h*	*y*	*m*	*d*	*h*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*
Jupiter	3	4	3	8	3	4	3	8		—			—			—			—	
Rahu	2	1	10	0	5	5	13	8	1	4	0	1	4	0		—			—	
Venus	3	8	10	0	9	1	23	8	2	4	0	3	8	0	4	1	0	4	1	0
Sun	1	0	20	0	10	2	13	8	0	8	0	4	4	0	1	2	0	5	3	0
Moon	2	7	20	0	12	10	3	8	1	8	0	6	0	0	2	11	0	8	2	0
Mars	1	4	26	16	14	3	0	0	0	10	20	6	10	20	1	6	20	9	8	20
Mercury	2	11	26	16	17	2	26	16	1	10	20	8	9	10	3	3	20	13	0	10
Saturn	1	9	3	8	19	0	0	0	1	1	10	9	10	20	1	11	10	14	11	20
Jupiter		—				—			2	1	10	12	0	0	3	8	10	18	8	0
Rahu		—				—				—			--		2	4	0	21	0	0

VIMSOTTARI DASA AND ANTARDASA

Antardasa	Sun (Ravi)—6						Moon (Chandra)—10						Mars (Mangala)—7					
	Sub Periods			Total			Sub Periods			Total			Sub Periods			Total		
	y	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*
Sun	0	3	18	0	3	18	—			—			—			—		
Moon	0	6	0	0	9	18	0	10	0	0	10	0	—			—		
Mars	0	4	6	1	1	24	0	7	0	1	5	0	0	4	27	0	4	27
Rahu	0	10	24	2	0	18	1	6	0	2	11	0	1	0	18	1	5	15
Jupiter	0	9	18	2	10	6	1	4	0	4	3	0	0	11	6	2	4	21
Saturn	0	11	12	3	9	18	1	7	0	5	10	0	1	1	9	3	6	0
Mercury	0	10	6	4	7	24	1	5	0	7	3	0	0	11	27	4	5	27
Ketu	0	4	6	5	0	0	0	7	0	7	10	0	0	4	27	4	10	24
Venus	1	0	0	6	0	0	1	8	0	9	6	0	1	2	0	6	0	24
Sun		—			—		0	6	0	10	0	0	0	4	6	6	5	0
Moon		—			—		—			—			0	7	0	7	0	0
Nakshatra	3,12,21						4,13,22						5,14,23					

Antardasa	Rahu—18						Jupiter (Brihaspati)—16						Saturn (Sani)—19					
	Sub Periods			Total			Sub Periods			Total			Sub Periods			Total		
	y	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*
Rahu	2	8	12	2	8	12	—			—			—			—		
Jupiter	2	4	24	5	1	6	2	1	18	2	1	18	—			—		
Saturn	2	10	6	7	11	12	2	6	12	4	8	0	3	0	3	3	0	3
Mercury	2	6	18	10	6	0	2	3	6	6	11	6	2	8	9	5	8	12
Ketu	1	0	18	11	6	18	0	11	6	7	10	12	1	1	9	6	9	21
Venus	3	0	0	14	6	18	2	8	0	10	6	12	3	2	0	9	11	21
Sun	0	10	24	15	5	12	0	9	18	11	4	0	0	11	12	10	11	3
Moon	1	6	0	16	11	12	1	4	0	12	8	0	1	7	0	12	6	3
Mars	1	0	18	18	0	0	0	11	6	13	7	6	1	1	9	13	7	12
Rahu		—			—		2	4	24	16	0	0	2	10	6	16	5	18
Jupiter		—			—		—			—			2	6	12	19	0	0
Nakshatra	6,15,24						7,16,25						8,17,26					

Antardasa	Mercury (Budha)—17						Ketu—7						Venus (Sukra)—20					
	Sub Periods			Total			Sub Periods			Total			Sub Periods			Total		
	y	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*	*y*	*m*	*d*
Mercury	2	4	27	2	4	27	—			—			—			—		
Ketu	0	11	27	3	4	24	0	4	27	0	4	27	—			—		
Venus	2	10	0	6	2	24	1	2	0	1	6	27	3	4	0	3	4	0
Sun	0	10	6	7	1	0	0	4	6	1	11	3	1	0	0	4	4	0
Moon	1	5	0	8	6	0	0	7	0	2	6	3	1	8	0	6	0	0
Mars	0	11	27	9	5	27	0	4	27	2	11	0	1	2	0	7	2	0
Rahu	2	6	18	12	0	15	1	0	18	3	11	18	3	0	0	10	2	0
Jupiter	2	3	6	14	3	21	0	11	6	4	10	24	2	8	0	12	10	0
Saturn	2	8	9	17	0	0	1	1	9	6	0	3	3	2	0	16	0	0
Mercury		—			—		0	11	27	7	0	0	2	10	0	18	10	0
Ketu		—			—		—			—			1	2	0	20	0	0
Nakshatra	9,18,27						1,10,19						2,11,20					

Balance of Vimsottari Dasa by Longitude of Moon

Long. of Moon	Moon in Mesha Simha, Dhanus				Moon in Vrisha Kanya, Makara				Moon in Mithuna Tula, Kumbha				Moon in Karkata Vrischika, Mina			
		y	m	d		y	m	d		y	m	d		y	m	d
° '																
0 0	Ketu	7	0	0	Sun	4	6	0	Mars	3	6	0	Jupiter	4	0	0
0 20		6	9	27		4	4	6		3	3	27		3	7	6
0 40		6	7	24		4	2	12		3	1	24		3	2	12
1 0		6	5	21		4	0	18		2	11	21		2	9	18
1 20		6	3	18		3	10	24		2	9	18		2	4	24
1 40		6	1	15		3	9	0		2	7	15		2	0	0
2 0		5	11	12		3	7	6		2	5	12		1	7	6
2 20		5	9	9		3	5	12		2	3	9		1	2	12
2 40		5	7	6		3	3	18		2	1	6		0	9	18
3 0		5	5	3		3	1	24		1	11	3		0	4	24
3 20		5	3	0		3	0	0		1	9	0	Saturn	19	0	0
3 40		5	0	27		2	10	6		1	6	27		18	6	9
4 0		4	10	24		2	8	12		1	4	24		18	0	18
4 20		4	8	21		2	6	18		1	2	21		17	6	27
4 40		4	6	18		2	4	24		1	0	18		17	1	6
5 0		4	4	15		2	3	0		0	10	15		16	7	15
5 20		4	2	12		2	1	6		0	8	12		16	1	24
5 40		4	0	9		1	11	12		0	6	9		15	8	3
6 0		3	10	6		1	9	18		0	4	6		15	2	12
6 20		3	8	3		1	7	24		0	2	3		14	8	21
6 40		3	6	0		1	6	0	Rahu	18	0	0		14	3	0
7 0		3	3	27		1	4	6		17	6	18		13	9	9
7 20		3	1	24		1	2	12		17	1	6		13	3	18
7 40		2	11	21		1	0	18		16	7	24		12	9	27
8 0		2	9	18		0	10	24		16	2	12		12	4	6
8 20		2	7	15		0	9	0		15	9	0		11	10	15
8 40		2	5	12		0	7	6		15	3	18		11	4	24
9 0		2	3	9		0	5	12		14	10	6		10	11	3
9 20		2	1	6		0	3	18		14	4	24		10	5	12
9 40		1	11	3		0	1	24		13	11	12		9	11	21
10 0		1	9	0	Moon	10	0	0		13	6	0		9	6	0
10 20		1	6	27		9	9	0		13	0	18		9	0	9
10 40		1	4	24		9	6	0		12	7	6		8	6	18
11 0		1	2	21		9	3	0		12	1	24		8	0	27
11 20		1	0	18		9	0	0		11	8	12		7	7	6
11 40		0	10	15		8	9	0		11	3	0		7	1	15
12 0		0	8	12		8	6	0		10	9	18		6	7	24
12 20		0	6	9		8	3	0		10	4	6		6	2	3
12 40		0	4	6		8	0	0		9	10	24		5	8	12
13 0		0	2	3		7	9	0		9	5	12		5	2	21
13 20	Venus	20	0	0		7	6	0		9	0	0		4	9	0
13 40		19	6	0		7	3	0		8	6	18		4	3	9
14 0		19	0	0		7	0	0		8	1	6		3	9	18
14 20		18	6	0		6	9	0		7	7	24		3	3	27
14 40		18	0	0		6	6	0		7	2	12		2	10	6
15 0		17	6	0		6	3	0		6	9	0		2	4	15
15 20		17	0	0		6	0	0		6	3	18		1	10	24
15 40		16	6	0		5	9	0		5	10	6		1	5	3
16 0		16	0	0		5	6	0		5	4	24		0	11	12
16 20		15	6	0		5	3	0		4	11	12		0	5	21
16 40		15	0	0		5	0	0		4	6	0	Mercury	17	0	0
17 0		14	6	0		4	9	0		4	0	18		16	6	27
17 20		14	0	0		4	6	0		3	7	6		16	1	24
17 40		13	6	0		4	3	0		3	1	24		15	8	21
18 0		13	0	0		4	0	0		2	8	12		15	3	18
18 20		12	6	0		3	9	0		2	3	0		14	10	15
18 40		12	0	0		3	6	0		1	9	18		14	5	12
19 0		11	6	0		3	3	0		1	4	6		14	0	9

Balance of Vimsottari Dasa by Longitude of Moon—contd.

Long. of Moon		Moon in Mesha Simha, Dhanus				Moon in Vrisha Kanya, Makara				Moon in Mithuna Tula, Kumbha				Moon in Karkata Vrischika, Mina			
°	'		y	m	d		y	m	d		y	m	d		y	m	d
19	0	Venus	11	6	0	Moon	3	3	0	Rahu	1	4	6	Merc.	14	0	9
19	20		11	0	0		3	0	0		0	10	24		13	7	6
19	40		10	6	0		2	9	0		0	5	12		13	2	3
20	0		10	0	0		2	6	0	Jupiter	16	0	0		12	9	0
20	20		9	6	0		2	3	0		15	7	6		12	3	27
20	40		9	0	0		2	0	0		15	2	12		11	10	24
21	0		8	6	0		1	9	0		14	9	18		11	5	21
21	20		8	0	0		1	6	0		14	4	24		11	0	18
21	40		7	6	0		1	3	0		14	0	0		10	7	15
22	0		7	0	0		1	0	0		13	7	6		10	2	12
22	20		6	6	0		0	9	0		13	2	12		9	9	9
22	40		6	0	0		0	6	0		12	9	18		9	4	6
23	0		5	6	0		0	3	0		12	4	24		8	11	3
23	20		5	0	0	Mars	7	0	0		12	0	0		8	6	0
23	40		4	6	0		6	9	27		11	7	6		8	0	27
24	0		4	0	0		6	7	24		11	2	12		7	7	24
24	20		3	6	0		6	5	21		10	9	18		7	2	21
24	40		3	0	0		6	3	18		10	4	24		6	9	18
25	0		2	6	0		6	1	15		10	0	0		6	4	15
25	20		2	0	0		5	11	12		9	7	6		5	11	12
25	40		1	6	0		5	9	9		9	2	12		5	6	9
26	0		1	0	0		5	7	6		8	9	18		5	1	6
26	20		0	6	0		5	5	3		8	4	24		4	8	3
26	40	Sun	6	0	0		5	3	0		8	0	0		4	3	0
27	0		5	10	6		5	0	27		7	7	6		3	9	27
27	20		5	8	12		4	10	24		7	2	12		3	4	24
27	40		5	6	18		4	8	21		6	9	18		2	11	21
28	0		5	4	24		4	6	18		6	4	24		2	6	18
28	20		5	3	0		4	4	15		6	0	0		2	1	15
28	40		5	1	6		4	2	12		5	7	6		1	8	12
29	0		4	11	12		4	0	9		5	2	12		1	3	9
29	20		4	9	18		3	10	6		4	9	18		0	10	6
29	40		4	7	24		3	8	3		4	4	24		0	5	3
30	0		4	6	0		3	6	0		4	0	0		0	0	0

Proportional Parts For Dasa of Planets

(To be subtracted from the balance of *dasa* for increase by minutes of the longitude of Moon)

	Ketu (7y)		Venus (20y)		Sun (6y)		Moon (10y)		Mars (7y)		Rahu (18y)		Jupiter (16y)		Saturn (19y)		Merc. (17y)		
	m	d	m	d	m	d	m	d	m	d	m	d	m	d	m	d	m	d	
1	0	3	0	9	0	3	0	5	0	3	0	8	0	7	0	9	0	8	1
2	0	6	0	18	0	5	0	9	0	6	0	16	0	14	0	17	0	15	2
3	0	9	0	27	0	8	0	14	0	9	0	24	0	22	0	26	0	23	3
4	0	13	1	6	0	11	0	18	0	13	1	2	0	29	1	4	1	1	4
5	0	16	1	15	0	14	0	23	0	16	1	11	1	6	1	13	1	8	5
6	0	19	1	24	0	16	0	27	0	19	1	19	1	13	1	21	1	16	6
7	0	22	2	3	0	19	1	2	0	22	1	27	1	20	2	0	1	24	7
8	0	25	2	12	0	22	1	6	0	25	2	5	1	28	2	8	2	1	8
9	0	28	2	21	0	24	1	11	0	28	2	13	2	5	2	17	2	9	9
10	1	1	3	0	0	27	1	15	1	1	2	21	2	12	2	26	2	17	10
15	1	17	4	15	1	11	2	8	1	17	4	2	3	18	4	8	3	25	15
20	2	3	6	0	1	24	3	0	2	3	5	12	4	24	5	21	5	3	20

SUN—SUB-PERIODS — 6 YEARS

SUN — Inter-Periods

SUN—Sun	m	d	h
Sun	0	5	10
Moon	0	9	0
Mars	0	6	7
Rahu	0	16	5
Jupiter	0	14	10
Saturn	0	17	2
Mercury	0	15	7
Ketu	0	6	7
Venus	0	18	0
Total	**3**	**18**	**0**

SUN—Moon	m	d	h
Moon	0	15	0
Mars	0	10	12
Rahu	0	27	0
Jupiter	0	24	0
Saturn	0	28	12
Mercury	0	25	12
Ketu	0	10	12
Venus	1	0	0
Sun	0	9	0
Total	**6**	**0**	**0**

SUN—Mars	m	d	h
Mars	0	7	8
Rahu	0	18	22
Jupiter	0	16	19
Saturn	0	19	23
Mercury	0	17	21
Ketu	0	7	8
Venus	0	21	0
Sun	0	6	7
Moon	0	10	12
Total	**4**	**6**	**0**

SUN—Rahu	m	d	h
Rahu	1	18	14
Jupiter	1	13	5
Saturn	1	21	7
Mercury	1	15	22
Ketu	0	18	21
Venus	1	24	0
Sun	0	16	5
Moon	0	27	0
Mars	0	18	22
Total	**10**	**24**	**0**

SUN—Jupiter	m	d	h
Jupiter	1	8	10
Saturn	1	15	14
Mercury	1	10	19
Ketu	0	16	19
Venus	1	18	0
Sun	0	14	10
Moon	0	24	0
Mars	0	16	19
Rahu	1	13	5
Total	**9**	**18**	**0**

SUN—Saturn	m	d	h
Saturn	1	24	3
Mercury	1	18	11
Ketu	0	19	23
Venus	1	27	0
Sun	0	17	2
Moon	0	28	12
Mars	0	19	23
Rahu	1	21	7
Jupiter	1	15	15
Total	**11**	**12**	**0**

SUN—Mercury	m	d	h
Mercury	1	13	8
Ketu	0	17	20
Venus	1	21	0
Sun	0	15	7
Moon	0	25	12
Mars	0	17	21
Rahu	1	15	22
Jupiter	1	10	19
Saturn	1	18	11
Total	**10**	**6**	**0**

SUN—Ketu	m	d	h
Ketu	0	7	8
Venus	0	21	0
Sun	0	6	7
Moon	0	10	12
Mars	0	7	8
Rahu	0	18	22
Jupiter	0	16	20
Saturn	0	19	23
Mercury	0	17	20
Total	**4**	**6**	**0**

SUN—Venus	m	d	h
Venus	2	0	0
Sun	0	18	0
Moon	1	0	0
Mars	0	21	0
Rahu	1	24	0
Jupiter	1	18	0
Saturn	1	27	0
Mercury	1	21	0
Ketu	0	21	0
Total	**12**	**0**	**0**

MOON—SUB-PERIODS — 10 YEARS

MOON — Inter-Periods

MOON—Moon	m	d	h
Moon	0	25	0
Mars	0	17	12
Rahu	1	15	0
Jupiter	1	10	0
Saturn	1	17	12
Mercury	1	12	12
Ketu	0	17	12
Venus	1	20	0
Sun	0	15	0
Total	**10**	**0**	**0**

MOON—Mars	m	d	h
Mars	0	12	6
Rahu	1	1	12
Jupiter	0	28	0
Saturn	1	3	6
Mercury	0	29	18
Ketu	0	12	6
Venus	1	5	0
Sun	0	10	12
Moon	0	17	12
Total	**7**	**0**	**0**

MOON—Rahu	m	d	h
Rahu	2	21	0
Jupiter	2	12	0
Saturn	2	25	12
Mercury	2	16	12
Ketu	1	1	12
Venus	3	0	12
Sun	0	27	0
Moon	1	15	0
Mars	1	1	0
Total	**18**	**0**	**0**

VIMSOTTARI DASA — SUB-SUB PERIODS

MOON—SUB-PERIODS — 10 YEARS

MOON — Inter-Periods

MOON—Jupiter	m	d	h
Jupiter	2	4	0
Saturn	2	16	0
Mercury	2	8	0
Ketu	0	28	0
Venus	2	20	0
Sun	0	24	0
Moon	1	10	0
Mars	0	28	0
Rahu	2	12	0
Total	16	0	0

MOON—Saturn	m	d	h
Saturn	3	0	6
Mercury	2	20	18
Ketu	1	3	6
Venus	3	5	0
Sun	0	28	12
Moon	1	17	12
Mars	1	3	6
Rahu	2	25	12
Jupiter	2	16	0
Total	19	0	0

MOON—Mercury	m	d	h
Mercury	2	12	18
Ketu	0	29	18
Venus	2	25	0
Sun	0	25	0
Moon	1	12	12
Mars	0	29	18
Rahu	2	16	12
Jupiter	2	8	0
Saturn	2	20	18
Total	17	0	0

MOON—Ketu	m	d	h
Ketu	0	12	6
Venus	1	5	0
Sun	0	10	12
Moon	0	17	12
Mars	0	12	6
Rahu	1	1	12
Jupiter	0	28	0
Saturn	1	3	6
Mercury	0	29	18
Total	7	0	0

MOON—Venus	m	d	h
Venus	3	10	0
Sun	1	0	0
Moon	1	20	0
Mars	1	5	0
Rahu	3	0	0
Jupiter	2	20	0
Saturn	3	5	0
Mercury	2	25	0
Ketu	1	5	0
Total	20	0	0

MOON—Sun	m	d	h
Sun	0	9	0
Moon	0	15	0
Mars	0	10	12
Rahu	0	27	0
Jupiter	0	24	0
Saturn	0	28	12
Mercury	0	25	12
Ketu	0	10	12
Venus	1	0	0
Total	6	0	0

MARS—SUB-PERIODS — 7 YEARS

MARS — Inter-Periods

MARS—Mars	m	d	h
Mars	0	8	13.8
Rahu	0	22	1.2
Jupiter	0	19	14.4
Saturn	0	23	6.6
Mercury	0	20	19.8
Ketu	0	8	13.8
Venus	0	24	12.0
Sun	0	7	8.4
Moon	0	12	6.0
Total	4	27	0.0

MARS—Rahu	m	d	h
Rahu	1	26	16.8
Jupiter	1	20	9.6
Saturn	1	29	20.4
Mercury	1	23	13.2
Ketu	0	22	1.2
Venus	2	3	0.0
Sun	0	18	21.6
Moon	1	1	12.0
Mars	0	22	1.2
Total	12	18	0.0

MARS—Jupiter	m	d	h
Jupiter	1	14	19.2
Saturn	1	23	4.8
Mercury	1	17	14.4
Ketu	0	19	14.4
Venus	1	26	0.0
Sun	0	16	19.2
Moon	0	28	0.0
Mars	0	19	14.4
Rahu	1	20	9.6
Total	11	6	0.0

MARS—Saturn	m	d	h
Saturn	2	3	4.2
Mercury	1	26	12.6
Ketu	0	23	6.6
Venus	2	6	12.0
Sun	0	19	22.8
Moon	1	3	6.0
Mars	0	23	6.6
Rahu	1	29	20.4
Jupiter	1	23	4.8
Total	13	9	0.0

MARS—Mercury	m	d	h
Mercury	1	20	13.8
Ketu	0	20	19.8
Venus	1	29	12.0
Sun	0	17	20.4
Moon	0	29	18.0
Mars	0	20	19.8
Rahu	1	23	13.2
Jupiter	1	17	14.4
Saturn	1	26	12.6
Total	11	27	0.0

MARS—Ketu	m	d	h
Ketu	0	8	13.8
Venus	0	24	12.0
Sun	0	7	8.4
Moon	0	12	6.0
Mars	0	8	13.8
Rahu	0	22	1.2
Jupiter	0	19	14.4
Saturn	0	23	6.6
Mercury	0	20	19.8
Total	4	27	0.0

MARS—SUB-PERIODS — 7 YEARS

MARS — Inter-Periods

MARS—Venus	m	d	h
Venus	2	10	0
Sun	0	21	0
Moon	1	5	0
Mars	0	24	12
Rahu	2	3	0
Jupiter	1	26	0
Saturn	2	6	12
Mercury	1	29	12
Ketu	0	24	12
Total	**14**	**0**	**0**

MARS—Sun	m	d	h
Sun	0	6	7.2
Moon	0	10	12.0
Mars	0	7	8.4
Rahu	0	18	21.6
Jupiter	0	16	19.2
Saturn	0	19	22.8
Mercury	0	17	20.4
Ketu	0	7	8.4
Venus	0	21	0.0
Total	**4**	**6**	**0**

MARS—Moon	m	d	h
Moon	0	17	12
Mars	0	12	6
Rahu	1	1	12
Jupiter	0	28	0
Saturn	1	3	6
Mercury	0	29	18
Ketu	0	12	6
Venus	1	5	0
Sun	0	10	12
Total	**7**	**0**	**0**

RAHU—SUB-PERIODS — 18 YEARS

RAHU — Inter-Periods

RAHU—Rahu	m	d	h
Rahu	4	25	19.2
Jupiter	4	9	14.4
Saturn	5	3	21.6
Mercury	4	17	16.8
Ketu	1	26	16.8
Venus	5	12	0.0
Sun	1	18	14.4
Moon	2	21	0.0
Mars	1	26	16.8
Total	**32**	**12**	**0.0**

RAHU—Jupiter	m	d	h
Jupiter	3	25	4.8
Saturn	4	16	19.2
Mercury	4	2	9.6
Ketu	1	20	9.6
Venus	4	24	0.0
Sun	1	13	4.0
Moon	2	12	0.8
Mars	1	20	9.6
Rahu	4	9	14.4
Total	**28**	**24**	**0.0**

RAHU—Saturn	m	d	h
Saturn	5	12	10.8
Mercury	4	25	8.4
Ketu	1	29	20.4
Venus	5	21	0.0
Sun	1	21	7.2
Moon	2	25	12.0
Mars	1	29	20.4
Rahu	5	3	21.6
Jupiter	4	16	19.2
Total	**34**	**6**	**0.0**

RAHU—Mercury	m	d	h
Mercury	4	10	1.2
Ketu	1	23	13.2
Venus	5	3	0.0
Sun	1	15	21.6
Moon	2	16	12.0
Mars	1	23	13.2
Rahu	4	17	16.8
Jupiter	4	2	9.6
Saturn	4	25	8.4
Total	**30**	**18**	**0.0**

RAHU—Ketu	m	d	h
Ketu	0	22	1.2
Venus	2	3	0.0
Sun	0	18	21.6
Moon	1	1	12.0
Mars	0	22	1.2
Rahu	1	26	16.8
Jupiter	1	20	9.6
Saturn	1	29	20.4
Mercury	1	23	13.2
Total	**12**	**18**	**0.0**

RAHU—Venus	m	d	h
Venus	6	0	0
Sun	1	24	0
Moon	3	0	0
Mars	2	3	0
Rahu	5	12	0
Jupiter	4	24	0
Saturn	5	21	0
Mercury	5	3	0
Ketu	2	3	0
Total	**36**	**0**	**0**

RAHU—Sun	m	d	h
Sun	0	16	4.8
Moon	0	27	0.0
Mars	0	18	21.6
Rahu	1	18	14.4
Jupiter	1	13	4.8
Saturn	1	21	7.2
Mercury	1	15	21.6
Ketu	0	18	21.6
Venus	1	24	0.0
Total	**10**	**24**	**0.0**

RAHU—Moon	m	d	h
Moon	1	15	0
Mars	1	1	12
Rahu	2	21	0
Jupiter	2	12	0
Saturn	2	25	12
Mercury	2	16	12
Ketu	1	1	12
Venus	3	0	0
Sun	0	27	0
Total	**18**	**0**	**0**

RAHU—Mars	m	d	h
Mars	0	22	1.2
Rahu	1	26	16.8
Jupiter	1	20	9.6
Saturn	1	29	20.4
Mercury	1	23	13.2
Ketu	0	22	1.2
Venus	2	3	0.0
Sun	0	18	21.6
Moon	1	1	12.0
Total	**12**	**18**	**0.0**

VIMSOTTARI DASA — SUB-SUB PERIODS

JUPITER—SUB-PERIODS — 16 YEARS

JUPITER — Inter-Periods

JUPITER—Jupiter			
	m	*d*	*h*
Jupiter	3	12	9.6
Saturn	4	1	14.4
Mercury	3	18	19.2
Ketu	1	14	19.2
Venus	4	8	0.0
Sun	1	8	9.6
Moon	2	4	0.0
Mars	1	14	19.2
Rahu	3	25	4.8
Total	**25**	**18**	**0.0**

JUPITER—Saturn			
	m	*d*	*h*
Saturn	4	24	9.6
Mercury	4	9	4.8
Ketu	1	23	4.8
Venus	5	2	0.0
Sun	1	15	14.4
Moon	2	16	0.0
Mars	1	23	4.8
Rahu	4	16	19.2
Jupiter	4	1	14.4
Total	**30**	**12**	**0.0**

JUPITER—Mercury			
	m	*d*	*h*
Mercury	3	25	14.4
Ketu	1	17	14.4
Venus	4	16	0.0
Sun	1	10	19.2
Moon	2	8	0.0
Mars	1	17	14.4
Rahu	4	2	9.6
Jupiter	3	18	19.2
Saturn	4	9	4.8
Total	**27**	**6**	**0.0**

JUPITER—Ketu			
	m	*d*	*h*
Ketu	0	19	14.4
Venus	1	26	0.0
Sun	0	16	19.2
Moon	0	28	0.0
Mars	0	19	14.4
Rahu	1	20	9.6
Jupiter	1	14	19.2
Saturn	1	23	4.8
Mercury	1	17	14.4
Total	**11**	**6**	**0.0**

JUPITER—Venus			
	m	*d*	*h*
Venus	5	10	0
Sun	1	18	0
Moon	2	20	0
Mars	1	26	0
Rahu	4	24	0
Jupiter	4	8	0
Saturn	5	2	0
Mercury	4	16	0
Ketu	1	26	0
Total	**32**	**0**	**0**

JUPITER—Sun			
	m	*d*	*h*
Sun	0	14	9.6
Moon	0	24	0.0
Mars	0	16	19.2
Rahu	1	13	4.8
Jupiter	1	8	9.6
Saturn	1	15	14.4
Mercury	1	10	19.2
Ketu	0	16	19.2
Venus	1	18	0.0
Total	**9**	**18**	**0.0**

JUPITER—Moon			
	m	*d*	*h*
Moon	1	10	0
Mars	0	28	0
Rahu	2	12	0
Jupiter	2	4	0
Saturn	2	16	0
Mercury	2	8	0
Ketu	0	28	0
Venus	2	20	0
Sun	0	24	0
Total	**16**	**0**	**0**

JUPITER—Mars			
	m	*d*	*h*
Mars	0	19	14.4
Rahu	1	20	9.6
Jupiter	1	14	19.2
Saturn	1	23	4.8
Mercury	1	17	14.4
Ketu	0	19	14.4
Venus	1	26	0.0
Sun	0	16	19.2
Moon	0	28	0.0
Total	**11**	**6**	**0.0**

JUPITER—Rahu			
	m	*d*	*h*
Rahu	4	9	14.4
Jupiter	3	25	4.8
Saturn	4	16	19.2
Mercury	4	2	9.6
Ketu	1	20	9.6
Venus	4	24	0.0
Sun	1	13	4.8
Moon	2	12	0.0
Mars	1	20	9.6
Total	**28**	**24**	**0.0**

SATURN—SUB-PERIODS — 19 YEARS

SATURN — Inter-Periods

SATURN—Saturn			
	m	*d*	*h*
Saturn	5	21	11.4
Mercury	5	3	10.2
Ketu	2	3	4.2
Venus	6	0	12.0
Sun	1	24	3.6
Moon	3	0	6.6
Mars	2	3	4.2
Rahu	5	12	10.8
Jupiter	4	24	9.6
Total	**36**	**3**	**0.0**

SATURN—Mercury			
	m	*d*	*h*
Mercury	4	17	6.6
Ketu	1	26	12.6
Venus	5	11	12.0
Sun	1	18	10.8
Moon	2	20	18.0
Mars	1	26	12.6
Rahu	4	25	8.4
Jupiter	4	9	4.8
Saturn	5	3	10.2
Total	**32**	**9**	**0.0**

SATURN—Ketu			
	m	*d*	*h*
Ketu	0	23	6.6
Venus	2	6	12.0
Sun	0	19	22.8
Moon	1	3	6.0
Mars	0	23	6.6
Rahu	1	29	20.6
Jupiter	1	23	4.8
Saturn	2	3	4.1
Mercury	1	26	12.5
Total	**13**	**9**	**0.0**

VIMSOTTARI DASA — SUB-SUB PERIODS

SATURN—SUB-PERIODS — 19 YEARS

SATURN — Inter-Periods

SATURN—Venus			
	m	*d*	*h*
Venus	6	10	0
Sun	1	27	0
Moon	3	5	0
Mars	2	6	12
Rahu	5	21	0
Jupiter	5	2	0
Saturn	6	0	12
Mercury	5	11	12
Ketu	2	6	12
Total	**38**	**0**	**0**

SATURN—Sun			
	m	*d*	*h*
Sun	0	17	2.4
Moon	0	28	12.0
Mars	0	19	22.8
Rahu	1	21	7.2
Jupiter	1	15	14.4
Saturn	1	24	3.6
Mercury	1	18	10.8
Ketu	0	19	22.8
Venus	1	27	0.0
Total	**11**	**12**	**0.0**

SATURN—Moon			
	m	*d*	*h*
Moon	1	17	12
Mars	1	3	6
Rahu	2	25	12
Jupiter	2	16	0
Saturn	3	0	6
Mercury	2	20	18
Ketu	1	3	6
Venus	3	5	0
Sun	0	28	12
Total	**19**	**0**	**0**

SATURN—Mars			
	m	*d*	*h*
Mars	0	23	6.6
Rahu	1	29	20.4
Jupiter	1	23	4.8
Saturn	2	3	4.2
Mercury	1	26	12.6
Ketu	0	23	6.6
Venus	2	6	12.0
Sun	0	19	22.8
Moon	1	3	6.0
Total	**13**	**9**	**0.0**

SATURN—Rahu			
	m	*d*	*h*
Rahu	5	3	21.6
Jupiter	4	16	19.2
Saturn	5	12	10.8
Mercury	4	25	8.4
Ketu	1	29	20.4
Venus	5	21	0.0
Sun	1	21	7.2
Moon	2	25	12.0
Mars	1	29	20.4
Total	**34**	**6**	**0.0**

SATURN—Jupiter			
	m	*d*	*h*
Jupiter	4	1	14.4
Saturn	4	24	9.6
Mercury	4	9	4.8
Ketu	1	23	4.8
Venus	5	2	0.0
Sun	1	15	14.4
Moon	2	16	0.0
Mars	1	23	4.8
Rahu	4	16	19.2
Total	**30**	**12**	**0.0**

MERCURY—SUB-PERIODS — 17 YEARS

MERCURY — Inter-Periods

MERCURY—Mercury			
	m	*d*	*h*
Mercury	4	2	19.8
Ketu	1	20	13.8
Venus	4	24	12.0
Sun	1	13	8.4
Moon	2	12	6.0
Mars	1	20	13.8
Rahu	4	10	1.2
Jupiter	3	25	14.4
Saturn	4	17	6.6
Total	**28**	**27**	**0.0**

MERCURY—Ketu			
	m	*d*	*h*
Ketu	0	20	19.8
Venus	1	29	12.0
Sun	0	17	20.4
Moon	0	29	18.0
Mars	0	20	19.8
Rahu	1	23	13.2
Jupiter	1	17	14.4
Saturn	1	26	12.6
Mercury	1	20	13.8
Total	**11**	**27**	**0.0**

MERCURY—Venus			
	m	*d*	*h*
Venus	5	20	0
Sun	1	21	0
Moon	2	25	0
Mars	1	29	12
Rahu	5	3	0
Jupiter	4	16	0
Saturn	5	11	12
Mercury	4	24	12
Ketu	1	29	12
Total	**34**	**0**	**0**

MERCURY—Sun			
	m	*d*	*h*
Sun	0	15	7.2
Moon	0	25	12.0
Mars	0	17	20.4
Rahu	1	15	21.6
Jupiter	1	10	19.2
Saturn	1	18	10.8
Mercury	1	13	8.4
Ketu	0	17	20.4
Venus	1	21	0.0
Total	**10**	**6**	**0.0**

MERCURY—Moon			
	m	*d*	*h*
Moon	1	12	12
Mars	0	29	18
Rahu	2	16	12
Jupiter	2	8	0
Saturn	2	20	18
Mercury	2	12	6
Ketu	0	29	18
Venus	2	25	0
Sun	0	25	12
Total	**17**	**0**	**0**

MERCURY—Mars			
	m	*d*	*h*
Mars	0	20	19.8
Rahu	1	23	13.2
Jupiter	1	17	14.4
Saturn	1	26	12.6
Mercury	1	20	13.8
Ketu	0	20	19.8
Venus	1	29	12.0
Sun	0	17	20.4
Moon	0	29	18.0
Total	**11**	**27**	**0.0**

VIMSOTTARI DASA — SUB-SUB PERIODS

MERCURY—SUB-PERIODS — 17 YEARS

MERCURY — Inter Periods

MERCURY—Rahu			
	m	*d*	*h*
Rahu	4	17	16.8
Jupiter	4	2	9.6
Saturn	4	25	8.4
Mercury	4	10	1.2
Ketu	1	23	13.2
Venus	5	3	0.0
Sun	1	15	21.6
Moon	2	16	12.0
Mars	1	23	13.2
Total	30	18	0.0

MERCURY—Jupiter			
	m	*d*	*h*
Jupiter	3	18	19.2
Saturn	4	9	4.8
Mercury	3	25	14.4
Ketu	1	17	14.4
Venus	4	16	0.0
Sun	1	10	19.2
Moon	2	8	0.0
Mars	1	17	14.4
Rahu	4	2	9.6
Total	27	6	0.0

MERCURY—Saturn			
	m	*d*	*h*
Saturn	5	3	10.2
Mercury	4	17	6.6
Ketu	1	26	12.6
Venus	5	11	12.0
Sun	1	18	10.8
Moon	2	20	18.0
Mars	1	26	12.6
Rahu	4	25	8.4
Jupiter	4	9	4.8
Total	32	9	0.0

KETU—SUB-PERIODS — 7 YEARS

KETU — Inter-Periods

KETU—Ketu			
	m	*d*	*h*
Ketu	0	8	13.8
Venus	0	24	12.0
Sun	0	7	8.4
Moon	0	12	6.0
Mars	0	8	13.8
Rahu	0	22	1.2
Jupiter	0	19	14.4
Saturn	0	23	6.6
Mercury	0	20	19.8
Total	4	27	0.0

KETU—Venus			
	m	*d*	*h*
Venus	2	10	0
Sun	0	21	0
Moon	1	5	0
Mars	0	24	12
Rahu	2	3	0
Jupiter	1	26	0
Saturn	2	6	12
Mercury	1	29	12
Ketu	0	24	12
Total	14	0	0

KETU—Sun			
	m	*d*	*h*
Sun	0	6	7.2
Moon	0	10	12.0
Mars	0	7	8.4
Rahu	0	18	21.6
Jupiter	0	16	19.2
Saturn	0	19	22.8
Mercury	0	17	20.4
Ketu	0	7	8.4
Venus	0	21	0.0
Total	4	6	0.0

KETU—Moon			
	m	*d*	*h*
Moon	0	17	12.0
Mars	0	12	6.0
Rahu	1	1	12.0
Jupiter	0	28	0.0
Saturn	1	3	6.0
Mercury	0	29	18.8
Ketu	0	12	6.0
Venus	1	5	0.0
Sun	0	10	12.0
Total	7	0	0.0

KETU—Mars			
	m	*d*	*h*
Mars	0	8	13.8
Rahu	0	22	1.2
Jupiter	0	19	14.4
Saturn	0	23	6.6
Mercury	0	20	19.8
Ketu	0	8	13.8
Venus	0	24	12.0
Sun	0	7	8.4
Moon	0	12	6.0
Total	4	27	0.0

KETU—Rahu			
	m	*d*	*h*
Rahu	1	26	16.8
Jupiter	1	20	9.6
Saturn	1	29	20.4
Mercury	1	23	13.2
Ketu	0	22	1.2
Venus	2	3	0.0
Sun	0	18	21.6
Moon	1	1	12.0
Mars	0	22	1.2
Total	12	18	0.0

KETU—Jupiter			
	m	*d*	*h*
Jupiter	1	14	19.2
Saturn	1	23	4.8
Mercury	1	17	14.4
Ketu	0	19	14.4
Venus	1	26	0.0
Sun	0	16	19.2
Moon	0	28	0.0
Mars	0	19	14.4
Rahu	1	20	9.6
Total	11	6	0.0

KETU—Saturn			
	m	*d*	*h*
Saturn	2	3	4.2
Mercury	1	26	12.6
Ketu	0	23	6.6
Venus	2	6	12.0
Sun	0	19	22.8
Moon	1	3	6.0
Mars	0	23	6.6
Rahu	1	29	20.4
Jupiter	1	23	4.8
Total	13	9	0.0

KETU—Mercury			
	m	*d*	*h*
Mercury	1	20	13.8
Ketu	0	20	19.8
Venus	1	29	12.0
Sun	0	17	20.4
Moon	0	29	18.0
Mars	0	20	19.8
Rahu	1	23	13.2
Jupiter	1	17	14.4
Saturn	1	26	12.6
Total	11	27	0.0

VIMSOTTARI DASA — SUB-SUB PERIODS

VENUS—SUB-PERIODS — 20 YEARS

VENUS — Inter Periods

VENUS—Venus			
	m	*d*	*h*
Venus	6	20	0
Sun	2	0	0
Moon	3	10	0
Mars	2	10	0
Rahu	6	0	0
Jupiter	5	10	0
Saturn	6	10	0
Mercury	5	20	0
Ketu	2	10	0
Total	**40**	**0**	**0**

VENUS—Sun			
	m	*d*	*h*
Sun	0	18	0
Moon	1	0	0
Mars	0	21	0
Rahu	1	24	0
Jupiter	1	18	0
Saturn	1	27	0
Mercury	1	21	0
Ketu	0	21	0
Venus	2	0	0
Total	**12**	**0**	**0**

VENUS—Moon			
	m	*d*	*h*
Moon	1	20	0
Mars	1	5	0
Rahu	3	0	0
Jupiter	2	20	0
Saturn	3	5	0
Mercury	2	25	0
Ketu	1	5	0
Venus	3	10	0
Sun	1	0	0
Total	**20**	**0**	**0**

VENUS—Mars			
	m	*d*	*h*
Mars	0	24	12
Rahu	2	3	0
Jupiter	1	26	0
Saturn	2	6	12
Mercury	1	29	12
Ketu	0	24	12
Venus	2	10	0
Sun	0	21	0
Moon	1	5	0
Total	**14**	**0**	**0**

VENUS—Rahu			
	m	*d*	*h*
Rahu	5	12	0
Jupiter	4	24	0
Saturn	5	21	0
Mercury	5	3	0
Ketu	2	3	0
Venus	6	0	0
Sun	1	24	0
Moon	3	0	0
Mars	2	3	0
Total	**36**	**0**	**0**

VENUS—Jupiter			
	m	*d*	*h*
Jupiter	4	8	0
Saturn	5	2	0
Mercury	4	16	0
Ketu	1	26	0
Venus	5	10	0
Sun	1	18	0
Moon	2	20	0
Mars	1	26	0
Rahu	4	24	0
Total	**32**	**0**	**0**

VENUS—Saturn			
	m	*d*	*h*
Saturn	6	0	12
Mercury	5	11	12
Ketu	2	6	12
Venus	6	10	0
Sun	1	27	0
Moon	3	5	0
Mars	2	6	12
Rahu	5	21	0
Jupiter	5	2	0
Total	**38**	**0**	**0**

VENUS—Mercury			
	m	*d*	*h*
Mercury	4	24	12
Ketu	1	29	12
Venus	5	20	0
Sun	1	21	0
Moon	2	25	0
Mars	1	29	12
Rahu	5	3	0
Jupiter	4	16	0
Saturn	5	11	12
Total	**34**	**0**	**0**

VENUS—Ketu			
	m	*d*	*h*
Ketu	0	24	12
Venus	2	10	0
Sun	0	21	0
Moon	1	5	0
Mars	0	24	12
Rahu	2	3	0
Jupiter	1	26	0
Saturn	2	6	12
Mercury	1	29	12
Total	**14**	**0**	**0**

N.B. : The months of *Dasas* shown in this Ephemeris are of 30 days each and the year is of 360 days.

EPHEMERIS TIME

Due to tidal friction on the Earth's surface there has been regular retardation in the rotation of the Earth, resulting in the gradual lengthening of the day and there is also irregularities in the period of rotation for other reasons. As a result, the *Universal Time* (U.T.) which is the mean solar time of Greenwich determined by the meridian observation, does not increase uniformly. So, a new measure of time, termed as *Ephemeris Time* (E.T.) has been introduced from the year 1960. The relation between the two time scales is E.T. = U.T. + Δ T. From 1984 the term E. T. was replaced by the term Dynamical Time.

Universal Time (U.T.) is the Greenwich Mean Time beginning at midnight. Terrestrial Dynamical Time (T. D. T.) is the uniform time system which is used in computing the ephemeris of the bodies of the solar system. T.D.T is currently ahead of U.T. by a small amount of Δ T which is determined by observations. So T.D.T=U.T+ΔT.

Values of Δ T from 1983 to 2014 and extrapolated values from 2015 to 2021

Year	Δ T	Year	Δ T	Year	Δ T	Year	Δ T	Year	Δ T
	s		*s*		*s*		*s*		*s*
1983.0	52.96	1991.0	57.57	1999.0	63.47	2007.0	65.15	Extrapolated	
1984.0	53.79	1992.0	58.31	2000.0	63.83	2008.0	65.46	2015.0	+68
1985.0	54.34	1993.0	59.12	2001.0	64.09	2009.0	65.78	2016.0	+68
1986.0	54.87	1994.0	59.98	2002.0	64.30	2010.0	66.07	2017.0	+68
1987.0	55.32	1995.0	60.78	2003.0	64.47	2011.0	66.32	2018.0	+68
1988.0	+55.82	1996.0	+61.63	2004.0	+64.57	2012.0	+66.60	2019.0	+69
1989.0	56.30	1997.0	62.29	2005.0	64.70	2013.0	+67	2020.0	+69
1990.0	56.86	1998.0	62.97	2006.0	64.85	2014.0	+67	2021.0	+70

Estimated value of ΔT in 2019 is +69*s* (i.e. 1 minute 9 seconds). Therefore 0*h* G.M.T. or U.T. occurs 69 seconds after 0*h* E.T. or T.D.T. The relation will be 0*h* E.T.= 5*h* 29.0*m* a.m. I.S.T. and 0*h* G.M.T or U.T. = 5*h* 30*m* a.m. I.S.T. The correction to obtain the planetary positions from 5*h* 29*m* to 5*h* 30*m* I.S.T. will be as follows based on the estimated value of ΔT = +69*s*. The correction are close approximation but may be in error by a few seconds in this process.

When the value of ΔT is 69*s* and the daily motion of planet is 1°, the correction will be nearly + 2.79" and for 5° motion the correction is + 13.95" ; for 10° motion, the correction is +27.9" and for 15° motion the correction is +41.85". etc. The correction for any intermediate value of motion may be found out by simple interpolation. When the value of ΔT changes, the corrections will also change according to the value of ΔT. From 1981 onwards ΔT is for Jan. 1, 0*h* U.T.

Value of True Ayanamsa for 1st day of each month from 2014 to 2020A.D

	2014	2015	2016	2017	2018	2019	2020
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
Jan. 1	24 03 20	24 04 05	24 04 49	24 05 34	24 06 19	24 07 06	24 07 55
Feb. 1	24 03 25	24 04 10	24 04 54	24 05 39	24 06 24	24 07 11	24 08 00
Mar. 1	24 03 28	24 04 13	24 04 57	24 05 42	24 06 28	24 07 14	24 08 03
Apr. 1	24 03 30	24 04 15	24 05 00	24 05 44	24 06 30	24 07 17	24 08 06
May 1	24 03 33	24 04 18	24 05 02	24 05 47	24 06 33	24 07 20	24 08 10
June 1	24 03 38	24 04 22	24 05 06	24 05 52	24 06 37	24 07 25	24 08 14
July 1	24 03 42	24 04 27	24 05 11	24 05 56	24 06 42	24 07 30	24 08 19
Aug. 1	24 03 47	24 04 32	24 05 16	24 06 01	24 06 47	24 07 35	24 08 25
Sept. 1	24 03 50	24 04 35	24 05 19	24 06 04	24 06 50	24 07 39	24 08 29
Oct. 1	24 03 53	24 04 37	24 05 22	24 06 07	24 06 53	24 07 41	24 08 32
Nov. 1	24 03 56	24 04 40	24 05 24	24 06 10	24 06 56	24 07 45	24 08 35
Dec. 1	24 04 00	24 04 44	24 05 29	24 06 14	24 07 00	24 07 49	24 08 40
						Jan.1 2021	24 08 46

Ascensional Differences *(Chara)*

The following table gives the ascensional differences for different latitudes of place and different declinations of planets and equatorial stars. These ascensional differences given in minutes of time are required in calculating the timings of daily rising and setting of the heavenly bodies at the given locality.

Dec. (δ)	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°
Lat. (φ)	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
1°	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9	1.0	1.1
2	0.1	0.3	0.4	0.5	0.7	0.9	1.0	1.1	1.3	1.4	1.5	1.7	1.8	2.0	2.1
4	0.3	0.5	0.8	1.1	1.4	1.7	2.0	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3
6	0.4	0.9	1.3	1.7	2.1	2.5	3.0	3.4	3.8	4.2	4.7	5.1	5.6	6.0	6.5
8	0.6	1.1	1.7	2.2	2.8	3.4	4.0	4.5	5.1	5.7	6.3	6.8	7.4	8.0	8.6
9	0.6	1.3	1:9	2.5	3.2	3.8	4.5	5.1	5.7	6.4	7.1	7.7	8.4	9.0	9.7
10	0.7	1.4	2.1	2.8	3.5	4.2	5.0	5.7	6.4	7.1	7.8	8.6	9.3	10.1	10.8
11	0.8	1.5	2.3	3.1	3.9	4.7	5.5	6.3	7.1	7.8	8.7	9.4	10.3	11.1	11.9
12	0.9	1.7	2.5	3.4	4.3	5.1	6.0	6.8	7.6	8.6	9.5	10.3	11.3	12.1	13.1
13	0.9	1.8	2.8	3.7	4.6	5.6	6.5	7.4	8.4	9.3	10.3	11.2	12.2	13.2	14.2
14	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.1	10.1	11.1	12.1	13.2	14.2	15.3
15	1.1	2.1	3.2	4.3	5.4	6.4	7.5	8.6	9.7	10.8	12.0	13.1	14.2	15.3	16.5
16	1.1	2.3	3.5	4.6	5.7	6.9	8.1	9.2	10.4	11.6	12.8	14.0	15.2	16.4	17.6
17	1.2	2.4	3.7	4.9	6.1	7.3	8.6	9.8	11.1	12.4	13.6	14.9	16.2	17.5	18.8
18	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.5	11.8	13.1	14.5	15.8	17.2	18.6	20.0
19	1.4	2.7	4.1	5.6	6.9	8.3	9.7	11.1	12.5	13.9	15.4	16.8	18.2	19.7	21.2
20	1.5	2.9	4.4	5.8	7.3	8.8	10.3	11.7	13.2	14.7	16.2	17.7	19.3	20.8	22.4
21	1.5	3.1	4.6	6.1	7.7	9.2	10.8	12.4	13.9	15.5	17.1	18.7	20.3	22.0	23.6
22	1.6	3.2	4.8	6.5	8.1	9.7	11.4	13.0	14.7	16.3	18.0	19.7	21.4	23.1	24.9
23	1.7	3.4	5.1	6.8	8.5	10.2	12.0	13.7	15.4	17.2	18.9	20.7	22.5	24.3	26.1
24	1.8	3.6	5.4	7.1	8.9	10.7	12.5	14.3	16.2	18.0	19.9	21.7	23.6	25.5	27.4
25	1.9	3.7	5.6	7.5	9.4	11.2	13.1	15.0	17.0	18.9	20.8	22.7	24.7	26.7	28.7
26	1.9	3.9	5.9	7.8	9.8	11.7	13.7	15.7	17.7	19.7	21.8	23.8	25.8	27.9	30.0
27	2.0	4.1	6.1	8.2	10.2	12.3	14.4	16.8	18.5	20.6	22.7	24.9	27.0	29.2	31.4
28	2.1	4.3	6.4	8.5	10.7	12.8	15.0	17.1	19.3	21.5	23.7	25.9	28.2	30.5	32.8
29	2.2	4.4	6.7	8.9	11.1	13.4	15.6	17.9	20.1	22.4	24.7	27.1	29.4	31.8	34.2
30	2.3	4.6	6.9	9.3	11.6	13.9	16.4	18.6	21.0	23.4	25.8	28.2	30.6	33.1	35.6
31	2.4	4.8	7.2	9.6	12.1	14.5	16.9	19.4	21.9	24.3	26.8	29.3	31.9	34.5	37.1
33	2.6	5.2	7.8	10.4	13.0	15.6	18.3	20.9	24.0	26.3	29.0	31.7	34.5	37.3	40.1
35	2.8	5.6	8.4	11.2	14.1	16.9	19.7	22.6	25.5	28.4	31.3	34.2	37.2	40.2	43.3
Trivandrum (8°31')	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.1	6.7	7.3	7.9	8.6	9.2
Chennai (13°4')	0.9	1.8	2.8	3.7	4.7	5.6	6.5	7.5	8.4	9.4	10.4	11.3	12.3	13.3	14.3
Hyderabad (17°26')	1.2	2.5	3.8	5.1	6.3	7.6	8.8	10.1	11.4	12.7	14.0	15.3	16.6	17.9	19.3
Mumbai (18°58')	1.4	2.7	4.1	5.5	6.9	8.3	9.7	11.1	12.5	13.9	15.3	16.7	18.2	19.7	21.1
Kolkata (22°35')	1.7	3.3	5.0	6.7	8.3	10.0	11.7	13.4	15.1	16.8	18.6	20.3	22.0	23.8	25.6
Ujjain (23°11')	1.7	3.4	5.1	6.9	8.6	10.3	12.1	13.8	16.3	17.3	19.1	20.9	22.7	24.5	26.4
Delhi (28°39')	2.2	4.4	6.6	8.7	11.0	13.2	15.4	17.6	19.8	22.1	24.4	26.7	29.0	31.3	33.7
Chandigarh (30°44')	2.4	4.8	7.1	9.5	11.9	14.3	16.7	19.2	21.6	24.1	26.5	29.0	31.6	34.1	36.7

Rule : To obtain the rising and setting times of the Sun, Moon etc., *firstly* find the time of its meridian passage. In case of Sun the apparent noon is the Meridian Passage time. In case of Moon the tabulated M. Pass. time is required to be interpolated to the approximate time of its rising or setting by subtraction or addition of about 12 minutes. A star passes the meridian when the sidereal time of the moment becomes equal to the Right Ascension of the star. Then find the semi-diurnal Arc which is as follows :—

Semi-diur. Arc = 6h ± Asc. diff. [*positive* sign is to be taken when the declination is North, and *negative* sign when the declination is South].

Local mean time of rising = M. Pass. – Semi-diur. Arc.

Local mean time of setting = M. Pass. + Semi-diur. Arc.

N. B. —If the latitude of place is South reverse the *sign* of declination and work.

Ascensional Differences *(Chara)*

The following table gives the ascensional differences for different latitudes of place and different declinations of planets and equatorial stars. These ascensional differences given in minutes of time are required in calculating the timings of daily rising and setting of the heavenly bodies at the given locality.

Dec. (δ)	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°
Lat. (φ)	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
1°	1.1	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.3
2	2.3	2.4	2.6	2.7	2.9	3.1	3.2	3.4	3.6	3.7	3.9	4.1	4.3	4.4	4.6
4	4.6	4.9	5.2	5.5	5.8	6.2	6.5	6.8	7.1	7.5	7.8	8.2	8.5	8.9	9.3
6	6.9	7.4	7.8	8.3	8.8	9.3	9.7	10.3	10.7	11.2	11.7	11.3	12.8	13.4	13.9
8	9.2	9.9	10.5	11.1	11.7	12.4	13.0	13.7	14.3	15.0	15.7	16.4	17.1	17.9	18.6
9	10.4	11.1	11.8	12.5	13.2	13.9	14.7	15.4	16.2	16.9	17.7	18.5	19.3	20.1	21.0
10	11.6	12.4	13.1	13.9	14.7	15.6	16.3	17.2	18.0	18.9	19.7	20.6	21.5	22.4	23.4
11	12.8	13.6	14.5	15.4	16.2	17.1	18.0	18.9	19.9	20.8	21.8	22.7	23.7	24.7	25.8
12	14.0	14.9	15.8	16.8	17.7	18.7	19.7	20.7	21.7	22.7	23.8	24.9	25.9	27.1	28.2
13	15.2	16.2	17.2	18.2	19.3	20.3	21.4	22.5	23.6	24.7	25.9	27.0	28.2	29.4	30.6
14	16.4	17.5	18.6	19.7	20.8	21.9	23.1	24.3	25.5	26.7	27.9	29.2	30.5	31.8	33.1
15	17.6	18.8	20.0	21.2	22.4	23.6	24.9	26.1	27.4	28.7	30.0	31.4	32.8	34.2	35.6
16	18.9	20.1	21.4	22.7	24.0	25.3	26.6	28.0	29.3	30.7	32.1	33.6	25.1	36.6	38.1
17	20.1	21.4	22.8	24.2	25.5	27.0	28.4	29.8	31.3	32.8	34.3	35.8	37.4	39.0	40.7
18	21.4	22.8	24.2	25.7	27.2	28.7	30.2	31.7	33.3	34.9	36.5	38.1	39.8	41.5	43.2
19	22.7	24.2	25.7	27.2	28.8	30.4	32.0	33.6	35.3	37.0	38.7	40.4	42.2	44.0	45.9
20	24.0	25.5	27.2	28.8	30.4	32.1	33.8	35.5	37.3	39.1	40.9	42.7	44.6	46.6	48.5
21	25.3	27.0	28.7	30.4	32.1	33.9	35.7	37.5	39.4	41.2	43.2	45.1	47.1	49.1	51.2
22	26.6	28.4	30.2	32.0	33.8	35.7	37.6	39.5	41.4	43.4	45.5	47.5	49.6	51.8	53.9
23	28.0	29.8	31.7	33.6	35.5	37.5	39.5	41.5	43.6	45.7	47.8	50.0	52.2	54.4	56.7
24	29.3	31.3	33.3	35.3	37.3	39.4	41.4	43.6	45.7	47.9	50.2	52.5	54.8	57.1	59.6
25	30.7	32.8	34.8	36.9	39.1	41.3	43.4	45.7	47.9	50.3	52.6	55.0	57.4	59.9	62.5
26	32.1	34.3	36.5	38.7	40.9	43.2	45.5	47.8	50.2	52.6	55.0	57.6	60.1	62.7	65.4
27	33.6	35:9	38.1	40.4	42.7	45.1	47.5	50.0	52.4	55.0	57.5	60.2	62.9	65.6	68.4
28	35.1	37.4	39.8	42.2	44.9	47.1	49.6	52.2	54.8	57.4	60.1	62.9	65.7	68.6	71.5
29	36.6	39.0	41.5	44.1	46.5	49.1	51.8	54.5	57.1	59.7	62.7	65.6	68.6	71.6	74.7
30	38.1	40.7	43.2	45.9	48.5	51.2	53.9	56.7	59.6	62.5	65.4	68.4	71.5	74.7	77.9
31	39.7	42.3	45.0	47.8	50.5	53.3	56.2	59.1	62.1	65.1	68.2	71.3	74.5	77.8	81.2
33	42.9	45.8	48.7	51.7	54.7	57.7	60.8	64.0	67.2	70.5	73.8	77.3	80.8	84.4	88.1
35	46.3	49.4	52.6	55.8	52.6	62.1	59.1	69.1	72.1	76.2	79.9	83.6	87.4	91.4	95.4
Trivandrum (8°31')	9.8	10.5	11.2	11.8	12.5	13.2	13.9	14.6	15.3	16.0	16.7	17.5	18.3	19.1	19.9
Chennai (13°4')	15.3	16.3	17.3	18.3	19.4	20.4	21.5	22.6	23.7	24.7	26.0	27.2	28.3	29.6	30.8
Hyderabad (17°26')	20.7	22.0	23.4	24.8	26.3	27.0	29.1	30.6	32.1	33.7	35.2	36.1	38.4	40.1	41.1
Mumbai (18°58')	22.6	24.1	25.6	27.2	28.7	30.3	31.9	33.6	35.2	36.9	38.6	40.3	42.1	43.9	45.8
Kolkata (22°35')	27.4	29.2	31.1	32.9	34.8	36.7	38.7	40.7	42.7	44.7	46.8	48.9	51.1	53.3	55.6
Ujjain (23°11')	28.2	30.1	32.0	33.9	35.9	37.8	39.8	41.9	43.0	46.1	48.2	50.4	52.6	54.9	57.3
Delhi (28°39')	36.1	38.5	40.9	43.4	45.9	48.4	51.0	53.6	56.3	59.1	61.8	64.7	67.6	70.5	73.6
Chandigarh (30°44')	39.3	41.9	44.5	47.3	50.0	52.8	55.0	58.5	61.4	63.4	67.4	70.5	73.7	77.0	80.3

Example : To find the times of Sunrise and Sunset at Kolkata on Jan. 1, 2019 :

The meridian passage of the Sun (apparent noon) on Jan. 1 in L.M.T. is 12*h* 03*m* 18*s*. Deducting 23*m* 30*s* the time in I.S.T. will be 11*h* 39*m* 48*s* at Kolkata. Declination of Sun on that day is 23° 02' South. According to Declination 23° 02', the Ascensional Difference for Lat. 22°N35' will be nearly 40*m* 42*s* for the place Kolkata as obtained from the above Table. Therefore Semi-diur. arc will be 6*h* (–) 40*m* 42*s* = 5*h* 19*m* 18*s*.

Time of Rising in I.S.T. = 11*h* 39*m* 48*s* (–) 5*h* 19*m* 18*s* = 6*h* 20*m* 30*s*

Time of Setting in I.S.T. = 11*h* 39*m* 48*s* (+) 5*h* 19*m* 18*s* = 16*h* 59*m* 06*s*

Applying correction of about (–) 3*m* 30*s* for rise for upper limb and (+) 3*m* 30*s* for set, for upper limb the sunrise time will be 6*h* 17*m* 00*s* and sunset time will be 17*h* 02*m* 36*s* (rounded to 6*h* 17*m* and 17*h* 03*m* respectively).

The time of rising and setting of planets may also be found out in the same process.

Tables of Ascendants *(Nirayana)*

The following tables give the ASCENDANT *(Lagna)* for 9 places and the TENTH HOUSE for all places at an interval of 10 degrees according to the *Nirayana* system, when the Sidereal Time for the given moment is known. The tables, which are prepared for the year 2019, may be utilised for a few years past and future without entailing any appreciable amount of error. These tables are applicable for all places on the earth lying on the same geographic latitudes as given below. It must be noted that in finding the sidereal time for a moment, the *local mean time* should be used and not the standard time. For finding out the Ascendant of other places, the book *Tables of Ascendants* by N. C. Lahiri may be used. An example showing the procedure for finding out the *Lagna* (Ascendant) and *Dasama* (Tenth House) for a place is shown on the next page.

2019 : Correction for Sidereal Time = +0*m* 43*s* 2019 : Correction for Ayanamsa = –1° 08'

TENTH HOUSE OR ASCENDANT		Tenth House for all places	ASCENDANT FOR Colombo 6°N 54'	Bangalore 12°N 58' Chennai 13°N 04'	Rangoon 16°N 47'	Mumbai 18°N 58'	Kolkata 22°N 35'	
		SIDEREAL TIME						
s	°	h m s	h m s	h m s	h m s	h m s	h m s	°
0 Mesha	0	1 29 18	19 24 43	19 20 36	19 17 53	19 16 30	19 13 44	0
	10	2 07 22	20 01 10	19 55 36	19 51 39	19 49 39	19 45 49	10
	20	2 46 47	20 37 26	20 31 14	20 26 22	20 23 50	20 19 10	20
1 Vrisha	0	3 26 52	21 17 19	21 08 44	21 03 03	21 00 12	20 54 38	0
	10	4 07 29	21 57 49	21 48 13	21 41 43	21 38 07	21 31 58	10
	20	4 51 16	22 39 24	22 29 13	22 22 01	22 18 23	22 11 15	20
2 Mithuna	0	5 34 20	23 22 12	23 11 21	23 04 04	23 00 24	22 53 04	0
	10	6 17 55	0 05 42	23 54 29	23 47 42	23 43 48	23 26 30	10
	20	7 01 28	0 49 42	0 38 55	0 31 59	0 08 16	0 21 18	20
3 Karkata	0	7 44 12	1 33 05	1 23 08	1 16 39	1 13 08	1 07 34	0
	10	8 25 41	2 15 55	2 07 03	2 01 12	1 58 09	1 52 17	10
	20	9 06 25	2 58 03	2 50 21	2 45 22	2 42 42	2 37 48	20
4 Simha	0	9 45 50	3 39 07	3 32 50	3 29 02	3 26 42	3 22 45	0
	10	10 23 59	4 18 59	4 14 34	4 11 42	4 10 04	4 07 18	10
	20	11 01 29	4 58 20	4 55 34	4 53 44	4 52 52	4 50 59	20
5 Kanya	0	11 37 22	5 37 22	5 36 22	5 35 26	5 35 12	5 34 30	0
	10	12 15 06	6 15 52	6 16 32	6 17 12	6 17 20	6 17 46	10
	20	12 51 56	6 54 49	6 57 06	6 58 49	6 59 54	7 01 22	20
6 Tula	0	13 29 18	7 33 57	7 38 05	7 40 50	7 42 20	7 45 14	0
	10	14 07 22	8 13 48	8 19 52	8 23 30	8 25 29	8 29 16	10
	20	14 46 48	8 54 34	9 01 54	9 06 50	9 09 20	9 14 02	20
7 Vriscika	0	15 27 03	9 36 34	9 45 04	9 51 02	9 54 04	9 59 26	0
	10	16 08 29	10 19 28	10 28 55	10 35 32	10 39 02	10 45 18	10
	20	16 51 05	11 02 42	11 13 05	11 20 04	11 24 02	11 30 39	20
8 Dhanus	0	17 34 32	11 46 38	11 57 28	12 04 34	12 08 29	12 15 38	0
	10	18 17 55	12 30 04	12 40 54	12 48 28	12 52 12	12 59 32	10
	20	19 01 16	13 13 02	13 23 32	13 30 38	13 34 28	13 41 26	20
9 Makara	0	19 44 04	13 55 06	14 04 54	14 11 30	14 15 02	14 21 24	0
	10	20 25 42	14 35 42	14 44 24	14 50 28	14 53 23	14 59 15	10
	20	21 06 15	15 14 42	15 22 14	15 26 42	15 29 56	15 34 53	20
10 Kumbha	0	21 45 40	15 52 30	15 58 32	16 02 38	16 04 46	16 08 43	0
	10	22 24 02	16 29 12	16 33 42	16 36 29	16 38 03	16 41 00	10
	20	23 01 29	17 04 38	17 07 27	17 00 16	17 10 16	17 12 34	20
11 Mina	0	23 38 22	17 39 38	17 40 43	17 41 26	17 41 48	17 42 38	0
	10	0 15 06	18 14 28	18 13 48	18 13 16	18 13 00	18 12 36	10
	20	0 52 10	18 49 18	18 46 54	18 45 28	18 44 26	18 43 02	20
	30	1 29 18	19 24 43	19 20 36	19 17 53	19 16 30	19 13 44	30

Tables of Ascendants *(Nirayana)—contd.*

Example : To find the Ascendant *(Lagna)* and Tenth House *(Dasama)* for Delhi (Lat. 28°N 39', Long. 77°E 13') on 20th April, 2019. A.D. at 14*h* 25*m* I.S.T. (Time of transit of tropical Sun to Taurus). The time in L.M.T. of the place is I.S.T. (–) 21*m* 08*s*. So the given time in L.M.T. is 14*h* 03*m* 52*s* of 20th April. The time occurs 2*h* 03*m* 52*s* after 12 Noon of 20th April. Sidereal Time on 20th April, 2019 A.D. at 12 Noon is 1*h* 52*m* 16*s*. By applying correction for Delhi (+3s), the Sidereal Time at 12 Noon is 1*h* 52*m* 19s. As the time in L.M.T. occurs 2*h* 03*m* 52*s* after Noon, the same has been added to Sidereal Time with necessary correction. The correction is 10 seconds per hour. So the corrected time is 2*h* 03*m* 52*s* +20s = 2*h* 04*m* 12*s*.

The Sidereal Time of the moment will be therefore be 1*h* 52*m* 16*s* (+) 2*h* 04*m* 12*s* = 3*h* 56*m* 28*s* Now from the book *'Tables of Ascendants'* by N. C. Lahiri using the table for Delhi : for Lat. 28°N 39' according to Sidereal Time 3*h* 56*m* 28*s*, the Ascendant is 4^{s} 09°53*m*. Applying Ayanamsa Corr. (–) 1°08' the Ascendants comes out 4^{s} 08°45' i.e. Simha 08°45'. Similarly with the same sidereal Time *viz.* 3*h* 56*m* 28*s*, the Tenth House is obtained as 1^{s} 08° 13^{s} *i.e.* Applyeing Ayanamsa Corr. (–) 1°08' Tenth House comes out 1^{s} 07°05' i.e. Vrisha 07°05'.

ASCENDANT		ASCENDANT FOR: Varanasi 25°N 19' Allahabad 25°N 28'			Delhi 28°N 39'			Chandigarh 30°N 44' Shimla 31°N 06'			Srinagar 34°N 06'		
		SIDEREAL TIME											
s	°	h	m	s	h	m	s	h	m	s	h	m	s
0 Mesha	0	19	11	33	19	08	51	19	07	00	19	04	03
	10	19	42	39	19	39	22	19	36	03	19	32	21
	20	20	15	18	20	10	18	20	07	02	20	02	08
1 Vrisha	0	20	50	00	20	44	08	20	39	50	20	34	08
	10	21	26	44	21	20	18	21	15	26	21	08	36
	20	22	05	38	21	58	48	21	53	20	21	46	09
2 Mithuna	0	22	47	13	22	40	02	22	34	20	22	27	02
	10	23	30	32	23	23	12	23	17	39	23	10	14
	20	0	15	27	0	08	32	0	02	58	23	55	48
3 Karkata	0	1	01	18	0	54	54	0	49	45	0	43	04
	10	1	47	44	1	41	42	1	37	12	1	31	12
	20	2	33	58	2	28	56	2	24	54	2	19	58
4 Simha	0	3	19	32	3	15	32	3	12	30	3	08	28
	10	4	04	44	4	01	48	3	59	42	3	56	44
	20	4	49	44	4	47	42	4	46	18	4	44	27
5 Kanya	0	5	33	55	5	33	12	5	32	40	5	31	54
	10	6	18	12	6	18	46	6	18	54	6	19	22
	20	7	02	32	7	04	08	7	05	28	7	06	54
6 Tula	0	7	47	13	7	49	54	7	52	03	7	54	52
	10	8	32	20	8	36	03	8	38	54	8	42	54
	20	9	18	08	9	22	40	9	26	20	9	31	28
7 Vriscika	0	10	04	08	10	09	45	10	14	03	10	20	08
	10	10	50	25	10	56	46	11	01	39	11	08	22
	20	11	36	18	11	43	28	11	48	47	11	56	08
8 Dhanus	0	12	21	28	12	28	48	12	34	20	12	41	54
	10	13	04	58	13	12	42	13	18	04	13	25	40
	20	13	47	04	13	54	04	13	59	28	14	06	58
9 Makara	0	14	26	35	14	33	22	14	38	26	14	45	04
	10	15	04	02	15	10	00	15	14	13	15	21	02
	20	15	39	03	15	44	04	15	47	58	15	52	55
10 Kumbha	0	16	12	03	16	16	03	16	19	03	16	22	22
	10	16	42	42	16	46	22	16	48	48	16	51	48
	20	17	13	35	17	15	32	17	16	48	17	18	48
11 Mina	0	17	43	03	17	43	56	17	44	19	17	45	04
	10	18	12	26	18	11	58	18	11	39	18	11	03
	20	18	41	33	18	40	14	18	38	58	18	37	22
	30	19	11	33	19	08	51	19	07	00	19	04	03

Proportional Parts
10° degree variation of Sidereal time distributed over each degree

°	m	m	m	m	m	m
10	26	27	28	29	30	31
1	3	3	3	3	3	3
2	5	5	6	6	6	6
3	8	8	8	9	9	9
4	10	11	11	12	12	12
5	13	13	14	14	15	15
6	16	16	17	17	18	19
7	18	19	20	20	21	22
8	21	22	22	23	24	25
9	23	24	25	26	27	28

°	m	m	m	m	m	m
10	32	33	34	35	36	37
1	3	3	3	4	4	4
2	6	7	7	7	7	7
3	10	10	10	11	11	11
4	13	13	14	14	14	15
5	16	16	17	17	18	18
6	19	20	20	21	22	22
7	22	23	24	25	25	26
8	26	26	27	28	29	30
9	29	30	31	31	32	33

°	m	m	m	m	m	m
10	38	39	40	41	42	43
1	4	4	4	4	4	4
2	8	8	8	8	8	9
3	11	12	12	12	13	13
4	15	16	16	16	17	17
5	19	19	20	20	21	21
6	23	23	24	25	25	26
7	27	27	28	29	29	30
8	30	31	32	33	34	34
9	34	35	36	37	38	39

°	m	m	m	m	m	m
10	44	45	46	47	48	49
1	4	5	5	5	5	5
2	9	9	9	9	10	10
3	13	14	14	14	14	15
4	18	18	18	19	19	20
5	22	22	23	23	24	24
6	26	27	28	28	29	29
7	31	32	32	33	34	34
8	35	36	37	38	38	39
9	40	40	41	42	43	44

Local Mean Time of Beginning of Lagnas, 2019

Time for the Central Station of India

(Subtract 4 mins. per day after the given date)

Date	Mesha	Vrisha	Mithuna	Karkata	Simha	Kanya	Tula	Vrischika	Dhanus	Makara	Kumbha	Mina
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
Jan. 0	12 34	14 14	16 12	18 25	20 42	22 54	1 08	3 23	5 39	7 44	9 31	11 04
16	11 35	13 15	15 13	17 26	19 44	21 55	24 05	2 24	4 40	6 45	8 32	10 05
Feb. 0	10 32	12 12	14 10	16 24	18 40	20 52	23 02	1 21	3 37	5 42	7 29	9 02
16	9 33	11 13	13 11	15 25	17 41	19 53	22 03	24 18	2 38	4 43	6 30	8 03
Mar. 1	8 38	10 18	12 15	14 30	16 45	18 58	21 08	23 23	1 43	3 48	5 35	7 08
16	7 39	9 19	11 17	13 31	15 47	17 59	20 09	22 24	24 40	2 49	4 36	6 09
Apr. 1	6 36	8 16	10 14	12 28	14 44	16 56	19 07	21 21	23 37	1 46	3 33	5 06
16	5 38	7 17	9 15	11 29	13 45	15 57	18 08	20 22	22 38	24 44	2 34	4 07
May 1	4 39	6 18	8 16	10 30	12 46	14 58	17 09	19 23	21 39	23 45	1 35	3 08
16	3 40	5 19	7 17	9 31	11 47	13 59	16 10	18 24	20 40	22 46	24 32	2 09
Jun. 1	2 37	4 17	6 15	8 28	10 44	12 56	15 07	17 21	19 37	21 43	23 29	1 06
16	1 38	3 18	5 16	7 29	9 45	11 57	14 08	16 22	18 38	20 44	22 30	24 03
Jul. 1	24 35	2 19	4 17	6 30	8 46	10 58	13 09	15 23	17 39	19 45	21 31	23 04
16	23 36	1 20	3 18	5 31	7 47	9 59	12 10	14 24	16 40	18 46	20 32	22 05
Aug. 1	22 33	24 13	2 15	4 28	6 44	8 56	11 07	13 21	15 38	17 43	19 30	21 02
16	21 34	23 14	1 16	3 29	5 45	7 57	10 08	12 22	14 39	16 44	18 31	20 03
Sep. 1	20 31	22 11	24 09	2 26	4 42	6 54	9 05	11 20	13 36	15 41	17 28	19 01
16	19 32	21 12	23 10	1 27	3 43	5 55	8 06	10 21	12 37	14 42	16 29	18 02
Oct. 1	18 33	20 13	22 11	24 24	2 44	4 56	7 07	9 22	11 38	13 43	15 30	17 03
16	17 34	19 14	21 12	23 25	1 45	3 57	6 08	8 23	10 39	12 44	14 31	16 04
Nov. 1	16 31	18 11	20 09	22 22	24 39	2 54	5 05	7 20	9 36	11 41	13 28	15 01
16	15 32	17 12	19 10	21 23	23 40	1 55	4 06	6 21	8 37	10 42	12 29	14 02
Dec. 1	14 33	16 13	18 11	20 24	22 41	24 53	3 07	5 22	7 38	9 43	11 30	13 03
16	13 34	15 14	17 12	19 25	21 42	23 54	2 08	4 23	6 39	8 44	10 31	12 04
31	12 35	14 15	16 13	18 26	20 43	22 55	1 09	3 24	5 40	7 45	9 32	11 05

Add 1 min. for 180° E. Longitude, no correction for 90° E. Long. and subtract 1 min. for 0° Long. and 2 mins. for 90° W. Long.

Correction to the above L. M. T. for latitude of place

Latitude	Mesha	Vrisha	Mithuna	Karkata	Simha	Kanya	Tula	Vrischika	Dhanus	Makara	Kumbha	Mina
	m	m	m	m	m	m	m	m	m	m	m	m
+60°	−48	−109	−149	−132	−76	−14	+48	+109	+149	+132	+76	+14
50	−27	−61	−80	−73	−44	8	+27	+61	+80	+73	+44	+8
40	−14	−32	−41	−38	−23	−4	+14	+32	+41	+38	+23	+4
30	−5	−11	−14	−13	−8	−1	+5	+11	+14	+13	+8	+1
23.2	0	0	0	0	0	0	0	0	0	0	0	0
20	+3	+6	+7	+6	+4	+1	−3	−6	−7	−6	−4	−1
+10	+10	+21	+26	+23	+14	+3	−10	−21	−26	−23	−14	−3
0	+17	+35	+44	+39	+24	+5	−17	−35	−44	−39	−24	−5
−10	+24	+49	+62	+55	+34	+7	−24	−49	−62	−55	−34	−7
−20	+31	+64	+81	+72	+44	+9	−31	−64	−81	−72	−44	−9
−30	+39	+81	+102	+91	+56	+11	−39	−81	−102	−91	−56	−11
−40	+48	+102	+129	+116	+71	+14	−48	−102	−129	−116	−71	−14

Correction Tables for the Beginning of Lagnas

The corrections given in the following table for certain cities in India when applied to the time of beginning of the Lagna (Ascendant) given on the previous page would give the beginning time of that Lagna in I. S. T. at the station.

Place	Mesha	Vrisha	Mithuna	Karkata	Simha	Kanya	Tula	Vrischika	Dhanus	Makara	Kumbha	Mina
	m	m	m	m	m	m	m	m	m	m	m	m
Agartala	−36	−36	−37	−36	−36	−35	−35	−34	−34	−34	−35	−35
Ahmedabad	+40	+40	+40	+40	+40	+40	+40	+40	+39	+39	+40	+40
Allahabad	+1	−1	−2	−2	−0	+2	+4	+6	+7	+7	+5	+3
Bangalore	+27	+35	+39	+38	+31	+22	+12	+4	0	+2	+9	+18
Bhopal	+20	+20	+20	+20	+20	+20	+20	+20	+21	+21	+20	+20
Bhubaneswar	−11	−9	−7	−8	−10	−13	−16	−18	−19	−19	−17	−14
Chandigarh	+16	+9	+6	+7	+13	+21	+29	+35	+39	+38	+32	+24
Chennai	+16	+24	+29	+27	+20	+11	+2	−6	−11	−9	−2	+7
Cuttack	−11	−9	−8	−9	−10	−13	−15	−18	−19	−18	−17	−14
Delhi	+17	+12	+9	+10	+15	+20	+25	+31	+33	+32	+28	+22
Guwahati	−39	−42	−43	−43	−40	−38	−35	−32	−31	−31	−33	−36
Hyderabad	+20	+25	+28	+27	+23	+17	+12	+7	+5	+6	+10	+15
Jaipur	+24	+21	+19	+19	+22	+26	+30	+33	+35	+34	+31	+28
Kanchipuram	+19	+27	+31	+29	+22	+13	+4	−4	−9	−7	0	+8
Kolkata	−23	−23	−22	−22	−23	−23	−24	−24	−25	−25	−24	−24
Lucknow	+3	0	−2	−1	+2	+5	+9	+12	+14	+13	+11	+7
Mumbai	+42	+45	+47	+46	+43	+40	+36	+32	+30	+31	+34	+38
Mysore	+31	+40	+45	+43	+35	+26	+16	+8	+3	+4	+12	+21
Nagpur	+15	+17	+18	+17	+16	+14	+12	+10	+10	+10	+11	+13
Panjim	+40	+47	+50	+49	+43	+36	+29	+23	+20	+21	+26	+33
Patna	−12	−15	−16	−15	−13	−11	−9	−7	−5	−6	−8	−10
Pondicherry	+19	+28	+32	+30	+23	+13	+3	−6	−11	−9	−2	+8
Pune	+38	+42	+44	+43	+40	+35	+31	+27	+25	+26	+29	+33
Puri	−11	−8	−7	−7	−10	−13	−16	−19	−20	−20	−17	−14
Rajahmundry	+7	+12	+15	+14	+10	+4	−2	−7	−9	−8	−4	+2
Srinagar	+22	+11	+6	+8	+17	+28	+41	+51	+56	+54	+45	+34
Tirupati	+19	+27	+31	+29	+23	+14	+6	−2	−6	−5	+2	+11
Trivandram	+32	+44	+50	+47	+38	+25	+12	0	−6	−3	+6	+20
Ujjain	+27	+27	+27	+27	+27	+27	+27	+27	+27	+27	+27	+27
Varanasi	−4	−6	−7	−6	−5	−2	0	+2	+3	+2	+1	−2
Vijayawada	+12	+18	+21	+19	+15	+9	+3	−3	−6	−5	0	+6

Foreign Cities

The following time corrections to the beginning of Lagnas would give the Local (Zonal) Standard Time of the beginning of the Lagna at the given place.

Place	Mesha	Vrisha	Mithuna	Karkata	Simha	Kanya	Tula	Vrischika	Dhanus	Makara	Kumbha	Mina
	m	m	m	m	m	m	m	m	m	m	m	m
Beijing	+1	−17	−26	−23	−8	+11	+28	+47	+55	+52	+37	+19
Cairo	−11	−17	−20	−19	−14	−7	−1	+5	+8	+7	+2	−5
Canberra	+49	+97	+121	+109	+69	+17	−39	−87	−112	−100	−59	−8
Colombo	+23	+36	+42	+38	+28	+14	−2	−15	−21	−17	−7	+7
Dhaka	−2	−2	−3	−3	−2	−2	−1	−1	−1	−1	−1	−2
Geneva	+12	−16	−31	−25	−2	+28	+56	+84	+100	+94	+70	+41
London	−31	−69	−91	−83	−50	−10	+30	+68	+90	+81	+48	+8
Moscow	−10	−60	−91	−78	−34	+17	+68	+117	+148	+135	+91	+40
Paris	+24	−8	−26	−19	+8	+42	+75	+107	+125	+119	+91	+57
Islamabad	−1	−11	−16	−14	−6	+6	+16	+26	+31	+30	+21	+10
Tokyo	−28	−41	−47	−45	−34	−20	−8	+5	+12	+10	−1	−15
Washington D.C.	−6	−23	−31	−29	−15	+3	+20	+36	+45	+42	+28	+10

TABLE OF THE TENTH HOUSE

(For all places on the Earth)

Minute	SIDEREAL TIME											
	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h
m	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '
0	11 7 00	11 23 17	0 9 11	0 24 28	1 9 05	1 23 11	2 7 00	2 20 49	3 4 55	3 19 32	4 4 49	4 20 43	5 7 00
1	7 16	23 33	9 26	24 43	9 19	23 25	7 14	21 03	5 09	19 47	5 05	20 59	7 16
2	7 32	23 50	9 42	24 58	9 34	23 40	7 28	21 17	5 24	20 02	5 20	21 15	7 32
3	7 49	24 06	9 58	25 13	9 49	23 54	7 41	21 30	5 38	20 17	5 36	21 32	7 49
4	11 8 05	11 24 21	10 13	02 528	11 00 3	12 407	2 7 55	22 144	3 5 52	3 20 32	4 5 52	4 21 48	5 8 05
5	8 21	24 37	10 29	25 43	10 17	24 21	8 9	21 58	6 06	20 47	6 07	22 04	8 21
6	8 37	24 53	10 44	25 58	10 32	24 35	8 23	22 12	6 21	21 02	6 23	22 19	8 37
7	8 54	25 10	11 00	26 12	10 46	24 48	8 36	22 26	6 35	21 17	6 38	22 36	8 54
8	11 9 11	11 25 26	11 16	02 627	11 10 0	12 502	2 8 50	22 240	3 6 49	3 21 32	4 6 54	4 22 52	5 9 11
9	9 27	25 42	11 31	26 42	11 14	25 16	9 04	22 54	7 03	21 47	7 10	23 08	9 27
10	9 43	25 58	11 47	26 57	11 29	25 30	9 18	23 08	7 18	22 02	7 25	23 24	9 43
11	10 00	26 14	12 03	27 12	11 43	25 44	9 31	23 22	7 32	22 17	7 41	23 41	10 00
12	11 10 16	11 26 30	12 18	02 727	11 15 7	12 558	2 9 45	23 236	3 7 47	3 22 32	4 7 57	4 23 57	5 10 16
13	10 32	26 46	12 33	27 42	12 11	26 12	9 59	23 50	8 01	22 47	8 13	24 13	10 32
14	10 48	27 01	12 49	27 57	12 26	26 26	10 13	24 04	8 16	23 02	8 28	24 29	10 48
15	11 05	27 17	13 04	28 11	12 40	26 39	10 26	24 18	8 30	23 17	8 44	24 46	11 07
16	11 11 22	11 27 34	13 19	02 826	11 25 4	12 653	2 10 40	24 432	3 8 45	3 23 33	4 9 00	4 25 02	5 11 22
17	11 38	27 50	13 34	28 41	13 08	27 07	10 54	24 46	8 59	23 48	9 16	25 19	11 38
18	11 54	28 06	13 50	28 56	13 22	27 21	11 08	25 00	9 14	24 03	9 31	25 36	11 54
19	12 11	28 22	14 05	29 10	13 36	27 35	11 21	25 14	9 28	24 18	9 47	25 52	12 11
20	11 12 27	11 28 38	14 21	02 925	11 35 0	12 749	2 11 35	25 528	3 9 43	3 24 33	4 10 03	4 26 07	5 12 27
21	12 43	28 54	14 36	29 40	14 04	28 03	11 49	25 42	9 57	24 48	10 19	26 23	12 43
22	12 59	29 09	14 52	29 55	14 19	28 17	12 03	25 56	10 12	25 04	10 34	26 39	12 59
23	13 16	29 25	15 07	1 009	14 33	28 30	12 16	26 10	10 26	25 19	10 51	26 56	13 16
24	11 13 32	11 29 42	15 23	1 023	11 44 7	12 844	2 12 30	26 24	3 10 41	3 25 34	4 11 07	4 27 12	5 13 32
25	13 48	11 29 58	15 38	038	15 01	28 58	12 44	26 38	10 55	25 49	11 23	27 28	13 48
26	14 04	0 0 14	15 54	053	15 15	29 12	12 59	26 52	11 10	26 05	11 38	27 44	14 04
27	14 21	0 30	16 09	1 07	15 29	29 25	13 13	27 06	11 25	26 20	11 54	28 01	14 21
28	11 14 37	0 0 46	16 24	1 122	11 54 3	12 939	2 13 26	27 20	3 11 39	3 26 35	4 12 10	4 28 17	5 14 37
29	14 53	1 02	16 39	1 37	15 57	12 953	13 40	27 34	11 54	26 50	12 26	28 33	14 53
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31	15 26	1 34	17 10	2 06	16 26	0 20	14 08	28 03	12 23	27 21	12 58	29 06	15 26
32	11 15 43	0 1 50	01 725	1 221	11 64 0	2 0 34	2 14 21	2 28 17	3 12 38	3 27 36	4 13 14	4 29 23	5 15 43
33	15 59	2 06	17 40	2 36	16 54	0 48	14 35	28 31	12 53	27 51	13 30	29 39	15 59
34	16 15	2 22	17 56	2 51	17 08	1 02	14 49	28 46	13 08	28 07	13 45	4 29 56	16 15
35	16 32	2 38	18 11	3 05	17 22	1 16	15 02	29 00	13 22	28 22	14 01	5 0 12	16 32
36	11 16 48	0 2 53	01 826	1 319	11 73 6	2 1 30	2 15 16	2 29 13	3 13 37	3 28 37	4 14 18	5 00 28	5 16 48
37	17 04	3 09	18 41	3 34	17 50	1 44	15 30	29 27	13 52	28 52	14 34	0 44	17 04
38	17 20	3 25	18 57	3 49	18 04	1 58	15 44	29 42	14 07	29 08	14 49	1 01	17 20
39	17 37	3 41	19 12	4 03	18 18	2 11	15 57	2 29 56	14 21	29 24	15 06	1 17	17 37
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41	18 09	4 13	19 42	4 32	18 46	2 39	16 25	0 24	14 50	3 29 54	15 38	1 49	18 09
42	18 25	4 28	19 57	4 47	19 00	2 53	16 39	0 38	15 05	4 0 10	15 53	2 06	18 25
43	18 42	4 44	20 12	5 01	19 14	3 06	16 53	0 52	15 19	0 26	16 10	2 22	18 42
44	11 18 58	0 5 00	02 027	1 515	11 92 8	2 3 20	2 17 07	3 1 06	3 15 34	4 0 41	4 16 26	5 2 38	5 18 58
45	19 14	5 16	20 42	5 30	19 42	3 34	17 21	1 20	15 49	0 56	16 42	2 54	19 14
46	19 30	5 31	20 58	5 45	19 56	3 48	17 35	1 35	16 04	1 12	16 57	3 11	19 30
47	19 47	5 47	21 13	5 59	20 10	4 01	17 48	1 49	16 18	1 27	17 14	3 27	19 47
48	11 20 03	0 6 03	02 128	1 613	12 02 4	2 4 15	2 18 02	3 2 03	3 16 33	4 1 42	4 17 30	5 3 44	5 20 03
49	20 19	6 19	21 43	6 28	20 38	4 29	18 16	2 17	16 48	1 57	17 46	4 00	20 19
50	20 35	6 34	21 58	6 43	20 52	4 43	18 30	2 32	17 04	2 13	18 01	4 17	20 35
51	20 52	6 50	22 13	6 57	21 06	4 56	18 44	2 46	17 19	2 29	18 18	4 33	20 52
52	11 21 08	0 7 06	02 228	1 711	12 12 0	2 5 10	2 18 58	3 3 00	3 17 33	4 2 44	4 18 34	5 4 49	5 21 08
53	21 24	7 22	22 43	7 25	21 34	5 24	19 12	3 14	17 48	3 00	18 50	5 05	21 24
54	21 40	7 37	22 58	7 40	21 48	5 38	19 26	3 29	18 03	3 15	19 06	5 22	21 40
55	21 57	7 53	23 13	7 54	22 02	5 51	19 39	3 43	18 17	3 31	19 23	5 38	21 56
56	11 22 12	0 8 08	02 328	1 808	12 21 6	2 6 05	2 19 53	3 3 57	3 18 32	4 3 47	4 19 39	5 5 55	5 22 12
57	22 28	8 24	23 43	8 22	22 30	6 19	20 07	4 12	18 47	4 02	19 55	6 11	22 28
58	22 44	8 40	23 58	8 37	22 44	6 33	20 21	4 27	19 03	4 18	20 10	6 28	22 44
59	23 01	8 55	24 13	8 51	22 57	6 46	20 35	4 41	19 18	4 33	20 27	6 44	23 01
60	11 23 17	0 9 11	02 428	1 905	12 31 1	2 7 00	2 20 49	3 4 55	3 19 32	4 4 49	4 20 43	5 7 00	5 23 17

TABLE OF THE TENTH HOUSE

(For all places on the Earth)

Minute	SIDEREAL TIME										
	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h
m	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′	s ° ′
0	5 23 17	6 9 11	6 24 28	7 9 05	7 23 11	8 7 00	8 20 49	9 4 55	9 19 32	10 4 49	10 20 43
1	23 33	9 26	24 43	9 20	23 25	7 14	21 03	5 09	19 47	5 05	20 59
2	23 49	9 42	24 58	9 34	23 39	7 28	21 17	5 23	20 02	5 20	21 15
3	24 06	9 58	25 13	9 48	23 53	7 41	21 30	5 37	20 17	5 36	21 32
4	5 24 21	6 10 13	6 25 28	7 10 03	7 24 07	8 7 55	8 21 44	9 5 52	9 20 32	10 5 52	10 21 48
5	24 37	10 29	25 43	10 17	24 21	8 09	21 58	6 06	20 47	6 07	22 04
6	24 53	10 44	25 58	10 32	24 35	8 23	22 12	6 21	21 02	6 23	22 20
7	25 09	11 00	26 13	10 46	24 48	8 36	22 26	6 35	21 17	6 39	22 36
8	5 25 26	6 11 16	6 26 27	7 11 00	7 25 02	8 8 50	8 22 40	9 6 49	9 21 32	10 6 54	10 22 52
9	25 42	11 32	26 42	11 14	25 16	9 04	22 54	7 04	21 47	7 10	23 08
10	25 58	11 47	26 57	11 29	25 30	9 18	23 08	7 18	22 02	7 25	23 24
11	26 15	12 02	27 12	11 43	25 44	9 31	23 22	7 32	22 18	7 41	23 41
12	5 26 30	6 12 18	6 27 27	7 11 57	7 25 58	8 9 45	8 23 36	9 7 47	9 22 33	10 7 57	10 23 57
13	26 46	12 33	27 42	12 11	26 12	9 59	23 50	8 02	22 48	8 13	24 13
14	27 02	12 49	27 57	12 26	26 26	10 13	24 04	8 16	23 03	8 28	24 29
15	27 19	13 04	28 11	12 40	26 39	10 26	24 18	8 30	23 18	8 44	24 46
16	5 27 34	6 13 19	6 28 26	7 12 54	7 26 53	8 10 40	8 24 32	9 8 45	9 23 33	10 9 00	10 25 02
17	27 50	13 35	28 41	13 08	27 07	10 54	24 46	9 00	23 48	9 16	25 18
18	28 06	13 50	28 56	13 22	27 21	11 08	25 00	9 14	24 03	9 31	25 34
19	28 23	14 06	29 10	13 36	27 35	11 21	25 14	9 28	24 18	9 47	25 51
20	5 28 38	6 14 21	6 29 25	7 13 50	7 27 49	8 11 35	8 25 28	9 9 43	9 24 33	10 10 03	10 26 07
21	28 54	14 37	29 39	14 04	28 03	11 49	25 42	9 58	24 48	10 19	26 23
22	29 10	14 52	6 29 54	14 19	28 17	12 03	25 56	10 12	25 03	10 35	26 39
23	29 27	15 07	7 0 09	14 33	28 30	12 16	26 10	10 26	25 19	10 51	26 56
24	5 29 42	6 15 23	7 0 23	7 14 47	7 28 44	8 12 30	8 26 24	9 10 41	9 25 34	10 11 07	10 27 12
25	5 29 58	15 38	0 38	15 01	28 58	12 44	26 38	10 56	25 49	11 23	27 28
26	6 0 14	15 54	0 52	15 15	29 12	12 58	26 52	11 10	26 04	11 38	27 44
27	0 31	16 09	1 07	15 29	29 25	13 12	27 06	11 24	26 20	11 54	28 01
28	6 0 46	6 16 24	7 1 22	7 15 43	7 29 39	8 13 26	8 27 20	9 11 39	9 26 35	10 12 10	10 28 17
29	1 02	16 39	1 37	15 57	29 53	13 40	27 34	11 54	26 50	12 26	28 33
30	1 18	16 55	1 52	16 12	8 0 07	13 54	27 49	12 08	27 05	12 42	28 49
31	1 35	17 10	2 06	16 26	0 20	14 07	28 03	12 22	27 21	12 58	29 06
32	6 1 50	6 17 25	7 2 21	7 16 40	8 0 34	8 14 21	8 28 17	9 12 38	9 27 36	10 13 14	10 29 23
33	2 06	17 40	2 35	16 54	0 48	14 35	28 31	12 53	27 51	13 30	29 39
34	2 22	17 56	2 50	17 08	1 02	14 49	28 45	13 07	28 06	13 46	10 29 55
35	2 39	18 11	3 05	17 22	1 16	15 02	28 59	13 22	28 22	14 02	11 0 12
36	6 2 53	6 18 26	7 3 19	7 17 36	8 1 30	8 15 16	8 29 13	9 13 37	9 28 37	10 14 18	11 0 28
37	3 09	18 41	3 33	17 50	1 44	15 30	29 27	13 52	28 52	14 34	0 44
38	3 25	18 57	3 48	18 04	1 58	15 44	29 42	14 06	29 08	14 50	1 00
39	3 41	19 12	4 02	18 18	2 11	15 57	8 29 56	14 20	29 24	15 06	1 17
40	6 3 57	6 19 27	7 4 17	7 18 32	8 2 25	8 16 11	9 0 10	9 14 35	9 29 39	10 15 22	11 1 33
41	4 13	19 42	4 31	18 46	2 39	16 25	0 24	14 50	9 29 54	15 38	1 49
42	4 28	19 57	4 46	19 00	2 53	16 39	0 38	15 04	10 0 10	15 54	2 05
43	4 44	20 12	5 00	19 14	3 06	16 53	0 52	15 19	0 26	16 10	2 22
44	6 5 00	6 20 27	7 5 15	7 19 28	8 3 20	8 17 07	9 1 06	9 15 34	10 0 41	10 16 26	11 2 38
45	5 16	20 42	5 30	19 42	3 34	17 21	1 20	15 49	0 56	16 42	2 54
46	5 31	20 58	5 44	19 56	3 48	17 35	1 35	16 03	1 12	16 58	3 10
47	5 47	21 13	5 59	20 10	4 01	17 48	1 49	16 18	1 27	17 14	3 27
48	6 6 03	6 21 28	7 6 13	7 20 24	8 4 15	8 18 02	9 2 03	9 16 33	10 1 42	10 17 30	11 3 44
49	6 19	21 43	6 28	20 38	4 29	18 16	2 17	16 48	1 57	17 46	4 00
50	6 34	21 59	6 42	20 52	4 43	18 30	2 32	17 03	2 13	18 02	4 16
51	6 50	22 14	6 56	21 06	4 56	18 44	2 46	17 18	2 29	18 18	4 33
52	6 7 06	6 22 28	7 7 11	7 21 20	8 5 10	8 18 58	9 3 00	9 17 33	10 2 44	10 18 34	11 4 49
53	7 22	22 43	7 25	21 34	5 24	19 12	3 14	17 48	3 00	18 50	5 05
54	7 37	22 59	7 40	21 48	5 38	19 26	3 29	18 02	3 15	19 06	5 21
55	7 53	23 14	7 54	22 02	5 51	19 39	3 43	18 17	3 31	19 22	5 38
56	6 8 08	6 23 28	7 8 08	7 22 16	8 6 05	8 19 53	9 3 57	9 18 32	10 3 47	10 19 39	11 5 55
57	8 24	23 43	8 22	22 30	6 19	20 07	4 12	18 47	4 02	19 55	6 11
58	8 39	23 59	8 37	22 44	6 33	20 21	4 26	19 02	4 18	20 11	6 27
59	8 55	24 14	8 51	22 57	6 46	20 35	4 40	19 17	4 33	20 27	6 44
60	6 9 11	6 24 28	7 9 05	7 23 11	8 7 00	8 20 49	9 4 55	9 19 32	10 4 49	10 20 43	11 7 00

Variation in 1 minute (60^s Secs.)	0-13′	0-14′	0-15′	0-16′	0-17′
" in 30^s Secs.	2″	2″	3″	3″	3″
" in 10^s Secs.		7″	8″	8″	9″

Ayanamsa correction for the required year to be applied to the final result. Correction for the year are given at the end of these Tables.

Ascendant for CHENNAI (Latitude 13° 04' North)

Also for all other Places in or near 13° N 4' latitude

Minute	SIDEREAL TIME											
	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h
m	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '
0	2 12 17	2 25 52	3 9 29	3 23 20	4 7 35	4 22 11	5 7 00	5 21 49	6 6 25	6 20 40	7 4 31	7 18 08	8 1 43
1	12 31	26 06	9 43	23 34	7 50	22 26	7 15	21 04	6 39	20 54	4 45	18 22	1 57
2	12 44	26 19	9 57	23 49	8 04	22 41	7 30	22 19	6 54	21 08	4 59	18 36	2 11
3	12 57	26 32	10 10	24 03	8 18	22 55	7 45	22 33	7 08	21 22	5 12	18 49	2 24
4	2 13 11	2 26 46	3 10 24	3 24 17	4 8 33	4 23 10	5 8 00	5 22 48	6 7 22	6 21 36	7 5 26	7 19 03	8 2 38
5	13 25	27 00	10 38	24 31	8 48	23 25	8 15	23 03	7 37	21 50	5 40	19 16	2 51
6	13 39	27 13	10 52	24 45	9 02	23 40	8 30	23 17	7 51	22 04	5 54	19 30	3 05
7	13 52	27 26	11 05	24 59	9 16	23 54	8 44	23 31	8 05	22 18	6 07	19 44	3 19
8	2 14 06	2 27 40	3 11 19	3 25 13	4 9 31	4 24 09	5 8 59	5 23 46	6 8 20	6 22 32	7 6 21	7 19 57	8 3 32
9	14 20	27 54	11 33	25 27	9 45	24 24	9 14	24 01	8 35	22 46	6 35	20 10	3 46
10	14 33	28 07	11 47	25 42	10 00	24 39	9 29	24 16	8 49	23 00	6 49	20 24	4 00
11	14 46	28 20	12 00	25 56	10 14	24 53	9 43	24 30	9 03	23 14	7 02	20 38	4 13
12	2 15 00	2 28 34	3 12 14	3 26 10	4 10 29	4 25 08	5 9 58	5 24 45	6 9 18	6 23 28	7 7 16	7 20 51	8 4 27
13	15 14	28 48	12 28	26 24	10 44	25 23	10 13	25 00	9 32	23 42	7 29	21 04	4 41
14	15 28	29 02	12 42	26 38	10 58	25 38	10 28	25 15	9 47	23 56	7 43	21 18	4 55
15	15 41	29 15	12 55	26 52	11 12	25 52	10 43	25 29	10 01	24 09	7 57	21 32	5 08
16	2 15 55	2 29 29	3 13 09	3 27 06	4 11 27	4 26 07	5 10 58	5 25 44	6 10 15	6 24 23	7 8 10	7 21 45	8 5 22
17	16 09	29 43	13 23	27 20	11 42	26 22	11 13	25 59	10 29	24 37	8 24	21 58	5 36
18	16 22	2 29 56	13 37	27 35	11 56	26 37	11 28	26 13	10 44	24 51	8 38	22 12	5 50
19	16 35	3 0 09	13 50	27 49	12 10	26 51	11 42	26 27	10 58	25 05	8 51	22 26	6 03
20	2 16 49	3 0 23	3 14 04	3 28 03	4 12 25	4 27 06	5 11 57	5 26 42	6 11 12	6 25 19	7 9 05	7 22 39	8 6 17
21	17 03	0 37	14 18	28 17	12 40	27 21	12 12	26 57	11 26	25 33	9 18	22 53	6 31
22	17 17	0 50	14 32	28 31	12 55	27 36	12 27	27 12	11 41	25 47	9 32	23 07	6 45
23	17 30	1 03	14 46	28 45	13 09	27 50	12 42	27 26	11 55	26 00	9 46	23 20	6 58
24	2 17 44	3 1 17	3 15 00	3 29 00	4 13 24	4 28 05	5 12 57	5 27 41	6 12 09	6 26 14	7 9 59	7 23 34	8 7 12
25	17 58	1 31	15 14	29 14	13 39	28 20	13 12	27 56	12 23	26 28	10 13	23 47	7 26
26	18 11	1 44	15 28	29 29	13 53	28 35	13 27	28 11	12 38	26 42	10 27	24 01	7 40
27	18 24	1 58	15 41	29 43	14 07	28 50	13 41	28 25	12 52	26 56	10 40	24 15	7 53
28	2 18 38	3 2 12	3 15 55	3 29 57	4 14 22	4 29 05	5 13 56	5 28 40	6 13 06	6 27 10	7 10 54	7 24 28	8 8 07
29	18 52	2 26	16 09	4 0 11	14 37	29 20	14 11	28 55	13 20	27 24	11 07	24 41	8 21
30	19 05	2 39	16 23	0 26	14 51	29 35	14 26	29 09	13 35	27 38	11 21	24 55	8 35
31	19 18	2 52	16 36	0 40	15 05	4 29 49	14 40	29 23	13 49	27 51	11 35	25 09	8 48
32	2 19 32	3 3 06	3 16 50	4 0 54	4 15 20	5 0 04	5 14 55	5 29 38	6 14 03	6 28 05	7 11 48	7 25 22	8 9 02
33	19 46	3 20	17 04	1 08	15 35	0 19	15 10	29 53	14 17	28 19	12 02	25 35	9 16
34	19 59	3 34	17 18	1 23	15 50	0 34	15 25	6 0 07	14 32	28 33	12 16	25 49	9 30
35	20 12	3 47	17 32	1 37	16 04	0 48	15 40	0 21	14 46	28 46	12 29	26 03	9 44
36	2 20 26	3 4 01	3 17 46	4 1 51	4 16 19	5 1 03	5 15 55	6 0 36	6 15 00	6 29 00	7 12 43	7 26 16	8 9 58
37	20 40	4 15	18 00	2 05	16 34	1 18	16 10	0 51	15 14	29 14	12 56	26 30	10 12
38	20 54	4 28	18 14	2 20	16 49	1 33	16 25	1 06	15 29	29 28	13 10	26 44	10 26
39	21 07	4 41	18 27	2 34	17 03	1 48	16 39	1 20	15 43	29 42	13 24	26 57	10 39
40	2 21 21	3 4 55	3 18 41	4 2 48	4 17 18	5 2 03	5 16 54	6 1 35	6 15 57	6 29 56	7 13 37	7 27 11	8 10 53
41	21 35	5 09	18 55	3 02	17 33	2 18	17 09	1 50	16 11	7 0 10	13 50	27 24	11 07
42	21 48	5 23	19 09	3 17	17 47	2 33	17 24	2 04	16 26	0 24	14 04	27 38	11 21
43	22 01	5 36	19 23	3 31	18 01	2 47	17 38	2 18	16 40	0 37	14 18	27 52	11 35
44	2 22 15	3 5 50	3 19 37	4 3 45	4 18 16	5 3 02	5 17 53	6 2 33	6 16 54	7 0 51	7 14 31	7 28 05	8 11 49
45	22 29	6 04	19 51	3 59	18 31	3 17	18 08	2 48	17 08	1 05	14 45	28 19	12 03
46	22 42	6 17	20 05	4 14	18 46	3 32	18 23	3 02	17 22	1 19	14 59	28 33	12 17
47	22 55	6 30	20 18	4 28	19 00	3 47	18 37	3 16	17 36	1 32	15 12	28 46	12 30
48	2 23 09	3 6 44	3 20 32	4 4 42	4 19 15	5 4 02	5 18 52	6 3 31	6 17 50	7 1 46	7 15 26	7 29 00	8 12 44
49	23 23	6 58	20 46	4 57	19 30	4 17	19 07	3 46	18 04	2 00	15 39	29 13	12 58
50	23 36	7 12	21 00	5 11	19 45	4 32	19 22	4 00	18 19	2 14	15 53	29 27	13 12
51	23 49	7 25	21 14	5 25	19 59	4 46	19 36	4 14	18 33	2 27	16 07	29 41	13 26
52	2 24 03	3 7 39	3 21 28	4 5 40	4 20 14	5 5 01	5 19 51	6 4 29	6 18 47	7 2 41	7 16 20	7 29 54	8 13 40
53	24 17	7 53	21 42	5 55	20 29	5 16	20 06	4 44	19 01	2 55	16 33	8 0 08	13 54
54	24 30	8 07	21 56	6 09	20 43	5 31	20 21	4 58	19 15	3 09	16 47	0 22	14 08
55	24 43	8 20	22 10	6 23	20 57	5 45	20 35	5 12	19 29	3 22	17 01	0 35	14 22
56	2 24 57	3 8 34	3 22 24	4 6 38	4 21 12	5 6 00	5 20 50	6 5 27	6 19 43	7 3 36	7 17 14	8 0 49	8 14 36
57	25 11	8 47	22 38	6 52	21 27	6 15	21 05	5 42	19 57	3 50	17 27	1 02	14 50
58	25 25	9 01	22 52	7 07	21 42	6 30	21 20	5 56	20 12	4 04	17 41	1 16	15 04
59	25 38	9 14	23 06	7 21	21 56	6 45	21 34	6 10	20 26	4 17	17 55	1 30	15 18
60	2 25 52	3 9 29	3 23 20	4 7 35	4 22 11	5 7 00	5 21 49	6 6 25	6 20 40	7 4 31	7 18 08	8 1 43	8 15 32

Ascendant for CHENNAI (Latitude 13° 04' North)

Also for all other Places in or near 13° N 4' latitude

Minute	SIDEREAL TIME										
	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h
m	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '
0	8 15 32	8 29 55	9 15 11	10 1 33	10 18 56	11 7 00	11 25 04	0 12 27	0 28 49	1 14 05	1 28 28
1	15 46	9 0 10	15 27	1 50	19 14	7 18	25 22	12 44	29 05	14 20	28 42
2	16 01	0 25	15 42	2 07	19 31	7 36	25 39	13 01	29 20	14 35	28 56
3	16 15	0 40	15 58	2 24	19 49	7 54	25 57	13 18	29 36	14 49	29 10
4	8 16 29	9 0 55	9 16 14	10 2 41	10 20 07	11 8 13	11 26 15	0 13 35	0 29 52	1 15 04	1 29 24
5	16 43	1 10	16 30	2 58	20 25	8 31	26 33	13 52	1 0 08	15 19	29 38
6	16 57	1 25	16 46	3 15	20 43	8 49	26 50	14 09	0 23	15 33	1 29 52
7	17 11	1 39	17 02	3 42	21 01	9 07	27 08	14 25	0 39	15 47	2 0 06
8	8 17 25	9 1 54	9 17 18	10 3 49	10 21 19	11 9 25	11 27 26	0 14 42	1 0 55	1 16 02	2 0 20
9	17 39	2 09	17 34	4 06	21 37	9 43	27 44	14 59	1 11	16 17	0 34
10	17 54	2 24	17 50	4 23	21 55	10 01	28 01	15 16	1 26	16 32	0 48
11	18 08	2 39	18 06	4 40	22 13	10 19	28 19	15 32	1 41	16 46	1 02
12	8 18 22	9 2 54	9 18 22	10 4 57	10 22 31	11 10 38	11 28 37	0 15 49	1 1 57	1 17 01	2 1 16
13	18 36	3 09	18 38	5 14	22 49	10 56	28 55	16 06	2 13	17 16	1 30
14	18 50	3 24	18 54	5 31	23 07	11 14	29 12	16 23	2 28	17 30	1 44
15	19 04	3 39	19 10	5 48	23 25	11 32	29 29	16 39	2 43	17 44	1 57
16	8 19 18	9 3 54	9 19 26	10 6 05	10 23 43	11 11 51	11 29 47	0 16 56	1 2 59	1 17 59	2 2 11
17	19 32	4 09	19 43	6 22	24 01	12 09	0 0 05	17 13	3 15	18 14	2 25
18	19 47	4 24	19 59	6 40	24 19	12 27	0 22	17 29	3 30	18 28	2 39
19	20 01	4 39	20 15	6 57	24 37	12 45	0 40	17 45	3 45	1 18 42	2 53
20	8 20 15	9 4 54	9 20 31	10 7 14	10 24 55	11 13 03	0 0 58	0 18 02	1 4 01	1 18 57	2 3 07
21	20 29	5 09	20 47	7 31	25 13	13 21	1 16	18 19	4 17	19 12	3 21
22	20 44	5 24	21 03	7 49	25 31	13 39	1 33	18 35	4 32	19 26	3 35
23	20 58	5 39	21 19	8 06	25 49	13 57	1 50	18 51	4 47	19 40	3 48
24	8 21 12	9 5 54	9 21 35	10 8 23	10 26 08	11 14 16	0 2 08	0 19 08	1 5 03	1 19 55	2 4 02
25	21 27	6 09	21 52	8 41	26 26	14 34	2 26	19 25	5 18	20 10	4 16
26	21 41	6 24	22 08	8 58	26 44	14 52	2 43	19 41	5 33	20 24	4 30
27	21 55	6 39	22 24	9 15	27 02	15 10	3 00	19 57	5 48	20 38	4 44
28	8 22 10	9 6 55	9 22 40	10 9 33	10 27 20	11 15 28	0 3 18	0 20 14	1 6 04	1 20 53	2 4 58
29	22 24	7 10	22 57	9 50	27 38	15 46	3 35	20 31	6 19	21 07	5 12
30	22 39	7 25	23 13	10 08	27 56	16 04	3 53	20 47	6 34	21 22	5 26
31	22 53	7 40	23 29	10 25	28 14	16 22	4 10	21 03	6 49	21 36	5 39
32	8 23 07	9 7 56	9 23 46	10 10 42	10 28 32	11 16 40	0 4 27	0 21 20	1 7 05	1 21 50	2 5 53
33	23 22	8 11	24 03	11 00	28 50	16 58	4 45	21 37	7 20	22 05	6 07
34	23 36	8 26	24 19	11 17	29 08	17 16	5 02	21 53	7 35	22 19	6 21
35	23 50	8 41	24 35	11 34	29 26	17 34	5 19	22 09	7 50	22 33	6 34
36	8 24 05	9 8 57	9 24 52	10 11 52	10 29 44	11 17 52	0 5 37	0 22 25	1 8 06	1 22 48	2 6 48
37	24 20	9 13	25 09	12 10	11 0 02	18 10	5 54	22 41	8 21	23 02	7 02
38	24 34	9 28	25 25	12 27	0 20	18 28	6 12	22 57	8 36	23 17	7 16
39	24 48	9 43	25 41	12 44	0 38	18 46	6 29	23 13	8 51	23 31	7 29
40	8 25 03	9 9 59	9 25 58	10 13 02	11 0 57	11 19 05	0 6 46	0 23 29	1 9 06	1 23 45	2 7 43
41	25 18	10 15	26 15	13 20	1 15	19 23	7 03	23 46	9 21	23 59	7 57
42	25 32	10 30	26 31	13 37	1 33	19 41	7 21	24 02	9 36	24 14	8 11
43	25 46	10 45	26 47	13 55	1 51	19 59	7 38	24 18	9 51	24 28	8 24
44	8 26 01	9 11 01	9 27 04	10 14 13	11 2 09	11 20 17	0 7 55	0 24 34	1 10 06	1 24 42	2 8 38
45	26 16	11 17	27 21	14 31	2 27	20 35	8 12	24 50	10 21	24 56	8 52
46	26 30	11 32	27 38	14 48	2 45	20 53	8 29	25 06	10 36	25 10	9 06
47	26 44	11 47	27 54	15 05	3 03	21 11	8 46	25 22	10 51	25 24	9 19
48	8 26 59	9 12 03	9 28 11	10 15 23	11 3 22	11 21 29	0 9 03	0 25 38	1 11 06	1 25 38	2 9 33
49	27 14	12 19	28 28	15 41	3 40	21 47	9 20	25 54	11 21	25 52	9 47
50	27 29	12 34	28 45	15 58	3 58	22 05	9 37	26 10	11 36	26 07	10 01
51	27 43	12 49	29 01	16 16	4 16	22 23	9 54	26 26	11 51	26 21	10 14
52	8 27 58	9 13 05	9 29 18	10 16 34	11 4 35	11 22 41	0 10 11	0 26 42	1 12 06	1 26 35	2 10 28
53	28 13	13 21	29 35	16 52	4 53	22 59	10 28	26 58	12 21	26 49	10 41
54	28 27	13 36	9 29 52	17 09	5 11	23 17	10 45	27 14	12 36	27 03	10 55
55	28 41	13 52	10 0 08	17 27	5 29	23 35	11 02	27 30	12 50	27 17	11 09
56	8 28 56	9 14 08	10 0 25	10 17 45	11 5 47	11 23 53	0 11 19	0 27 46	1 13 05	1 27 31	2 11 22
57	29 11	14 24	0 42	18 03	6 05	24 11	11 36	28 02	13 20	27 45	11 36
58	29 26	14 39	0 59	18 20	6 23	24 28	11 53	28 17	13 35	27 59	11 50
59	29 40	14 55	1 16	18 38	6 41	24 46	12 10	28 33	13 50	28 14	12 03
60	8 29 55	9 15 11	10 1 33	10 18 56	11 7 00	11 25 04	0 12 27	0 28 49	1 14 05	1 28 28	2 12 17

Variation in 1 minute (60^s Secs.)	0-13'	0-14'	0-15'	0-16'	0-17'	0-18'	0-19'
30^s Secs.	7'	7'	8'	8'	9'	9'	10'
10^s Secs.	2'	2'	3'	3'	3'	3'	3'

Ayanamsa correction for the required year is to be applied to the final result. Correction for the year are given at the end of these Tables.

Ascendant for Latitude 19° 0' North

For MUMBAI 18°N 58', Ahmadnagar & Jagdalpur etc.

Minute	SIDEREAL TIME											
	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h
m	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '
0	2 14 48	2 28 11	3 11 31	3 25 01	4 8 46	4 22 48	5 7 00	5 21 12	6 5 14	6 18 59	7 2 29	7 15 49	7 29 12
1	15 01	28 24	11 44	25 14	9 00	23 02	7 14	21 26	5 28	19 13	2 42	16 02	29 25
2	15 15	28 38	11 58	25 28	9 14	23 17	7 29	21 40	5 42	19 27	2 56	16 16	29 39
3	15 28	28 51	12 11	25 41	9 28	23 31	7 43	21 54	5 55	19 40	3 09	16 29	7 29 53
4	2 15 42	2 29 05	3 12 25	3 25 55	4 9 42	4 23 45	5 7 57	5 22 08	6 6 09	6 19 54	7 3 22	7 16 42	8 0 06
5	15 55	29 18	12 38	26 09	9 56	23 59	8 11	22 22	6 23	20 08	3 35	16 55	0 19
6	16 09	29 32	12 52	26 23	10 10	24 13	8 26	22 37	6 37	20 21	3 49	17 09	0 33
7	16 22	29 45	13 05	26 36	10 24	24 27	8 40	22 51	6 51	20 35	4 03	17 22	0 47
8	2 16 36	2 29 58	3 13 19	3 26 50	4 10 38	4 24 41	5 8 54	5 23 05	6 7 05	6 20 48	7 4 16	7 17 35	8 1 00
9	16 49	3 0 11	13 32	27 04	10 52	24 55	9 08	23 19	7 19	21 01	4 29	17 48	1 13
10	17 03	0 25	13 46	27 18	11 06	25 10	9 23	23 33	7 33	21 15	4 43	18 02	1 27
11	17 16	0 38	13 59	27 31	11 20	25 24	9 37	23 47	7 46	21 29	4 56	18 15	1 41
12	2 17 30	3 0 51	3 14 12	3 27 45	4 11 34	4 25 38	5 9 51	5 24 01	6 8 00	6 21 42	7 5 09	7 18 28	8 1 54
13	17 43	1 04	14 25	27 58	11 48	25 52	10 05	24 15	8 14	21 55	5 22	18 41	2 08
14	17 57	1 18	14 39	28 12	12 02	26 07	10 20	24 30	8 28	22 09	5 36	18 55	2 22
15	18 10	1 31	14 52	28 25	12 16	26 21	10 34	24 44	8 41	22 23	5 49	19 09	2 35
16	2 18 24	3 1 44	3 15 06	3 28 39	4 12 30	4 26 35	5 10 48	5 24 58	6 8 55	6 22 36	7 6 02	7 19 22	8 2 49
17	18 37	1 57	15 19	28 53	12 44	26 49	11 02	25 12	9 09	22 50	6 15	19 35	3 02
18	18 51	2 11	15 33	29 07	12 58	27 04	11 16	25 26	9 23	23 04	6 29	19 49	3 16
19	19 04	2 24	15 46	29 20	13 12	27 18	11 30	25 40	9 37	23 17	6 43	20 02	3 29
20	2 19 17	3 2 38	3 16 00	3 29 34	4 13 26	4 27 32	5 11 44	5 25 54	6 9 51	6 23 31	7 6 56	7 20 15	8 3 43
21	19 30	2 51	16 13	3 29 48	13 40	27 46	11 58	26 08	10 05	23 44	7 09	20 28	3 57
22	19 44	3 05	16 27	4 0 02	13 54	28 00	12 13	26 22	10 19	23 58	7 23	20 42	4 11
23	19 57	3 18	16 40	0 15	14 08	28 14	12 27	26 36	10 32	24 12	7 36	20 56	4 24
24	2 20 11	3 3 31	3 16 54	4 0 29	4 14 22	4 28 28	5 12 41	5 26 50	6 10 46	6 24 25	7 7 49	7 21 09	8 4 38
25	20 24	3 44	17 07	0 43	14 36	28 42	12 55	27 04	11 00	24 38	8 02	21 22	4 52
26	20 38	3 58	17 21	0 57	14 50	28 57	13 10	27 18	11 14	24 52	8 16	21 36	5 06
27	20 51	4 11	17 34	1 10	15 04	29 11	13 24	27 32	11 27	25 06	8 29	21 49	5 19
28	2 21 04	3 4 24	3 17 47	4 1 24	4 15 18	4 29 25	5 13 38	5 27 46	6 11 41	6 25 19	7 8 42	7 22 02	8 5 33
29	21 17	4 37	18 00	1 38	15 32	29 39	13 52	28 00	11 55	25 32	8 55	22 15	5 47
30	21 31	4 51	18 14	1 52	15 46	29 54	14 07	28 14	12 09	25 46	9 09	22 29	6 01
31	21 44	5 04	18 27	2 05	16 00	5 00	14 21	28 28	12 22	26 00	9 23	22 43	6 14
32	2 21 58	3 5 18	3 18 41	4 2 19	4 16 14	5 00	5 14 35	5 28 42	6 12 36	6 26 13	7 9 36	7 22 56	8 6 28
33	22 11	5 31	18 54	2 33	16 28	00 36	14 49	28 56	12 50	26 26	9 49	23 09	6 42
34	22 25	5 45	19 08	2 47	16 42	00 51	15 04	29 10	13 04	26 40	10 03	23 23	6 56
35	22 38	5 58	19 21	3 00	16 56	01 05	15 18	29 24	13 17	26 53	10 16	23 36	7 09
36	2 22 51	3 6 11	3 19 35	4 3 14	4 17 10	5 01 19	5 15 32	5 29 38	6 13 31	6 27 06	7 10 29	7 23 49	8 7 23
37	23 04	6 24	19 48	3 28	17 24	01 33	15 46	29 52	13 45	27 19	10 42	24 02	7 37
38	23 18	6 38	20 02	3 42	17 38	01 48	16 00	6 00 6	13 59	27 33	10 56	24 16	7 51
39	23 31	6 51	20 15	3 55	17 52	02 02	16 14	00 20	14 12	27 47	11 09	24 30	8 04
40	2 23 45	3 7 04	3 20 29	4 4 09	4 18 06	5 02 16	5 16 28	6 00 4	6 14 26	6 28 00	7 11 22	7 24 43	8 8 18
41	23 58	7 17	20 43	4 23	18 20	02 30	16 42	00 48	14 40	28 13	11 35	24 56	8 32
42	24 12	7 31	20 57	4 37	18 34	02 44	16 57	01 02	14 54	28 27	11 49	25 10	8 46
43	24 25	7 44	21 10	4 51	18 48	02 58	17 11	01 16	15 07	28 41	12 03	25 23	8 59
44	2 24 38	3 7 58	3 21 24	4 5 05	4 19 02	5 03 12	5 17 25	6 01 30	6 15 21	6 28 54	7 12 16	7 25 36	8 9 13
45	24 51	8 11	21 37	5 19	19 16	03 26	17 39	01 44	15 34	29 07	12 29	25 49	9 27
46	25 05	8 25	21 51	5 33	19 31	03 41	17 54	01 58	15 48	29 21	12 43	26 03	9 41
47	25 18	8 38	22 04	5 46	19 45	03 55	18 08	02 12	16 02	29 35	12 56	26 17	9 55
48	2 25 32	3 8 51	3 22 18	4 6 00	4 19 59	5 04 09	5 18 22	6 02 26	6 16 15	6 29 48	7 13 09	7 26 30	8 10 09
49	25 45	9 04	22 31	6 14	20 13	04 23	18 36	02 40	16 29	7 00 1	13 22	26 43	10 23
50	25 59	9 18	22 45	6 28	20 27	04 38	18 51	02 54	16 43	00 15	13 36	26 57	10 37
51	26 12	9 31	22 58	6 41	20 41	04 52	19 05	03 08	16 56	00 28	13 49	27 11	10 50
52	2 26 25	3 9 44	3 23 12	4 6 55	4 20 55	5 05 06	5 19 19	6 03 22	6 17 10	7 00 41	7 14 02	7 27 24	8 11 04
53	26 38	9 57	23 25	7 08	21 09	05 20	19 33	03 36	17 24	00 54	14 15	27 37	11 18
54	26 52	10 11	23 39	7 22	21 24	05 35	19 47	03 50	17 38	01 08	14 29	27 51	11 32
55	27 05	10 24	23 52	7 35	21 38	05 49	20 01	04 04	17 51	01 22	14 42	28 05	11 46
56	2 27 18	3 10 38	3 24 06	4 7 51	4 21 52	5 06 03	5 20 15	6 04 18	6 18 05	7 01 35	7 14 55	7 28 18	8 12 00
57	27 31	10 51	24 20	8 05	22 06	06 17	20 29	04 32	18 18	01 48	15 08	28 31	12 14
58	27 45	11 05	24 34	8 19	22 20	06 32	20 44	04 46	18 32	02 02	15 22	28 45	12 28
59	27 58	11 18	24 47	8 32	22 34	06 46	20 58	05 00	18 46	02 16	15 36	28 59	12 42
60	2 28 11	3 11 31	3 25 01	4 8 46	4 22 48	5 07 00	5 21 12	6 05 14	6 18 59	7 02 29	7 15 49	7 29 12	8 12 56

Ascendant for Latitude 19°0' North

For MUMBAI 18°N58' Ahmadnagar & Jagdalpur etc.

Minute	SIDEREAL TIME											
	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	
m	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	
0	8 12 56	8 27 23	9 12 53	9 29 45	10 17 56	11 7 00	11 26 03	0 14 15	1 1 07	1 16 37	2 1 04	
1	13 10	27 38	13 10	10 0 03	18 15	7 19	26 22	14 33	1 23	16 52	1 18	
2	13 24	27 53	13 26	0 20	18 34	7 38	26 40	14 50	1 39	17 07	1 32	
3	13 38	28 08	13 42	0 37	18 53	7 57	26 59	15 07	1 55	17 22	1 46	
4	8 13 52	8 28 23	9 13 58	10 0 55	10 19 12	11 8 17	11 27 18	0 15 25	1 2 11	1 17 37	2 2 00	
5	14 06	28 38	14 15	1 13	19 31	8 36	27 37	15 43	2 27	17 52	2 14	
6	14 21	28 53	14 31	1 30	19 49	8 55	27 55	16 00	2 43	18 06	2 28	
7	14 35	29 08	14 47	1 48	20 08	9 15	28 14	16 17	2 59	18 21	2 42	
8	14 49	8 29 23	9 15 03	10 2 06	10 20 27	11 9 34	11 28 33	0 16 35	1 3 15	1 18 36	2 2 56	
9	15 03	29 38	15 20	2 24	20 46	9 53	28 52	16 53	3 31	18 51	3 10	
10	15 17	8 29 53	15 36	2 41	21 04	10 12	29 10	17 10	3 47	19 05	3 24	
11	15 31	9 0 08	15 52	2 59	21 23	10 32	29 28	17 27	4 03	19 20	3 37	
12	8 15 45	9 0 23	9 16 09	10 3 17	10 21 42	11 10 51	11 29 47	0 17 44	1 4 19	1 19 35	2 3 51	
13	15 59	0 38	16 27	3 35	22 01	11 10	0 0 06	18 02	4 35	19 50	4 05	
14	16 14	0 53	16 42	3 53	22 20	11 29	0 24	18 19	4 50	20 04	4 19	
15	16 28	1 08	16 58	4 11	22 39	11 48	0 42	18 36	5 06	20 19	4 33	
16	8 16 42	9 1 24	9 17 15	10 4 29	10 22 58	11 12 07	0 1 01	0 18 53	1 5 22	1 20 34	2 4 47	
17	16 56	1 39	17 32	4 47	23 17	12 26	1 20	19 11	5 38	20 49	5 01	
18	17 11	1 54	17 48	5 05	23 36	12 45	1 38	19 28	5 53	21 03	5 15	
19	17 25	2 09	18 04	5 23	23 55	13 05	1 56	19 45	6 09	21 17	5 28	
20	8 17 39	9 2 25	9 18 21	10 5 41	10 24 14	11 13 24	0 2 15	0 20 02	1 6 25	1 21 32	2 5 42	
21	17 53	2 40	18 38	5 59	24 33	13 43	2 24	20 19	6 41	21 47	5 56	
22	18 08	2 55	18 55	6 17	24 52	14 02	2 52	20 36	6 56	22 01	6 10	
23	18 22	3 10	19 11	6 35	25 11	14 22	3 10	20 53	7 12	22 15	6 23	
24	8 18 36	9 3 26	9 19 28	10 6 53	10 25 30	11 14 41	0 3 29	0 21 10	1 7 28	1 22 30	2 6 37	
25	18 51	3 42	19 45	7 11	25 49	15 00	3 47	21 27	7 44	22 45	6 51	
26	19 05	3 57	20 02	7 29	26 08	15 19	4 05	21 44	7 59	22 59	7 05	
27	19 19	4 12	20 18	7 47	26 27	15 38	4 23	22 01	8 14	23 13	7 18	
28	8 19 34	9 4 28	9 20 35	10 8 05	10 26 47	11 15 57	0 4 42	0 22 18	1 8 30	1 23 28	2 7 32	
29	19 49	4 44	20 52	8 23	27 06	16 16	5 00	22 35	8 46	23 43	7 46	
30	20 03	4 59	21 09	8 41	27 25	16 35	5 18	22 52	9 01	23 57	8 00	
31	20 17	5 14	21 25	8 59	27 44	16 55	5 36	23 08	9 16	24 11	8 13	
32	8 20 32	9 5 30	9 21 42	10 9 18	10 28 03	11 17 13	0 5 55	0 23 25	1 9 32	1 24 26	2 8 27	
33	20 47	5 46	21 59	9 36	28 22	17 32	6 13	23 42	9 48	24 41	8 41	
34	21 01	6 01	22 16	9 54	28 41	17 51	6 31	23 59	10 03	24 55	8 55	
35	21 15	6 16	22 33	10 12	29 00	18 11	6 59	24 15	10 18	25 09	9 08	
36	8 21 30	9 6 32	9 22 50	10 10 31	10 29 19	11 18 30	0 7 07	0 24 32	1 10 34	1 25 24	2 9 22	
37	21 45	6 48	23 07	10 50	29 38	18 49	7 25	24 49	10 50	25 39	9 36	
38	21 59	7 03	23 24	11 08	10 29 57	19 08	7 43	25 06	11 05	25 53	9 50	
39	22 13	7 19	23 41	11 26	11 0 16	19 27	8 01	25 22	11 20	26 07	10 03	
40	8 22 28	9 7 35	9 23 58	10 11 45	11 0 36	11 19 46	0 8 19	0 25 39	1 11 35	1 26 21	2 10 17	
41	22 43	7 51	24 15	12 04	0 55	20 05	8 37	25 56	11 51	26 36	10 31	
42	22 57	8 06	24 33	12 22	1 14	20 24	8 55	26 12	12 06	26 50	10 45	
43	23 11	8 22	24 50	12 40	1 33	20 43	9 13	26 28	12 21	27 04	10 58	
44	8 23 26	9 8 38	9 25 07	10 12 59	11 1 53	11 21 02	0 9 31	0 26 45	1 12 36	1 27 18	2 11 11	
45	23 41	8 54	25 24	13 18	2 12	21 21	9 49	27 02	12 52	27 33	11 25	
46	23 55	9 09	25 42	13 36	2 31	21 40	10 07	27 18	13 07	27 47	11 39	
47	24 10	9 25	25 59	13 54	2 50	21 59	10 25	27 34	13 22	28 01	11 52	
48	8 24 25	9 9 41	9 26 16	10 14 13	11 3 09	11 22 18	0 10 43	0 27 51	1 13 37	1 28 15	2 12 06	
49	24 40	9 57	26 33	14 32	3 28	22 37	11 01	28 08	13 52	28 29	12 20	
50	24 54	10 13	26 51	14 50	3 47	22 55	11 19	28 24	14 07	28 43	12 34	
51	25 09	10 29	27 08	15 08	4 06	23 14	11 37	28 40	14 22	28 57	12 47	
52	8 25 24	9 10 45	9 27 25	10 15 27	11 4 26	11 23 33	0 11 54	0 28 57	1 14 37	1 29 11	2 13 00	
53	25 39	11 01	27 43	15 46	4 45	23 52	12 12	29 14	14 52	29 26	13 14	
54	25 53	11 17	28 00	16 04	5 04	24 10	12 30	29 30	15 07	29 40	13 28	
55	26 08	11 33	28 17	16 23	5 23	24 29	12 47	0 29 46	15 22	1 29 54	13 41	
56	8 26 23	9 11 49	9 28 35	10 16 42	11 5 43	11 24 48	0 13 05	1 0 02	1 15 37	2 0 08	2 13 54	
57	26 38	12 05	28 53	17 01	6 02	25 07	13 23	0 19	15 52	0 22	14 08	
58	26 53	12 21	29 10	17 19	6 21	25 25	13 40	0 35	16 07	0 36	14 22	
59	27 08	12 37	29 27	17 37	6 40	25 44	13 57	0 51	16 22	0 50	14 35	
60	8 27 23	9 12 53	9 29 45	10 17 56	11 7 00	11 26 03	0 14 15	1 1 07	1 16 37	2 1 04	2 14 48	

	0-13'	0-14'	0-15'	0-16'	0-17'	0-18'	0-19'	0-20'
Secs.	7'	7'	8'	8'	9'	9'	10'	10'
Secs.	2'	2'	3'	3'	3'	3'	3'	3'
Secs,								

Variation in 1 minute (60s Secs.)
" in 30s Secs.
" in 10s Secs,

Ayanamsa correction for the required year is to be applied to the final result. Correction for the year are given at the end of these Tables.

Ascendant for KOLKATA (Latitude 22° 35' North)

(Also for Kharagpur 22°N 30', Indore 22°N 43', Jamnagar 22°N 27' etc.)

Minute	SIDEREAL TIME											
	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h
m	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '
0	2 16 24	2 29 39	31247	32602	4 929	4 2310	5 700	5 2050	6 431	6 17 58	7 1 13	7 14 21	7 27 36
1	16 37	2 29 52	1300	2615	942	2324	714	2104	4 44	18 11	1 26	14 34	27 49
2	16 51	3 0 06	1313	2629	956	2338	728	2118	4 58	18 25	1 40	14 48	28 03
3	17 04	0 19	1326	2642	1009	2351	741	2131	5 12	18 39	1 53	15 01	28 17
4	2 17 18	3 0 32	31339	32655	4 1023	4 2405	5 755	5 2145	6 5 25	6 18 52	7 2 06	7 15 14	7 28 30
5	17 31	0 45	1352	2708	1037	2419	809	2159	5 38	19 05	2 19	15 27	28 43
6	17 45	0 58	1406	2722	1051	2433	823	2213	5 52	19 19	2 32	15 40	28 57
7	17 58	1 11	1419	2735	1104	2447	836	2226	6 06	19 32	2 45	15 53	29 10
8	2 18 11	3 1 24	31432	32748	4 1118	4 2501	5 850	5 2240	6 6 19	6 19 45	7 2 58	7 16 06	7 29 24
9	18 24	1 37	1445	2801	1131	2515	904	2254	6 32	19 58	3 11	16 19	29 37
10	18 38	1 50	1459	2815	1144	2529	918	2308	6 46	20 12	3 25	16 33	7 29 51
11	18 51	2 03	1512	2828	1158	2542	932	2321	7 00	20 26	3 38	16 46	8 0 04
12	2 19 04	3 2 16	31525	32842	4 1212	4 2556	5 946	5 2335	6 7 13	6 20 39	7 3 51	7 16 59	8 0 17
13	19 17	2 29	1538	2855	1226	2610	1000	2348	7 26	20 52	4 04	17 12	0 30
14	19 31	2 43	1552	2909	1240	2624	1014	2402	7 40	21 06	4 17	17 26	0 44
15	19 44	2 55	1605	2922	1253	2637	1028	2415	7 54	21 19	4 30	17 39	0 58
16	2 19 58	3 3 09	31618	32935	4 1307	4 2651	5 1042	5 2429	6 8 07	6 21 32	7 4 43	7 17 52	8 1 11
17	20 11	3 22	1631	32948	1321	2705	1056	2443	8 21	21 45	4 56	18 05	1 25
18	20 25	3 36	1645	4 002	1335	2719	1110	2457	8 35	21 59	5 10	18 19	1 39
19	20 38	3 49	1658	015	1348	2732	1123	2510	8 48	22 12	5 23	18 32	1 52
20	2 20 51	3 4 02	31711	4 029	4 1402	4 2746	5 1137	5 2524	6 9 02	6 22 25	7 5 36	7 18 45	8 2 06
21	21 04	4 15	1724	042	1415	2800	1151	2538	9 15	22 38	5 49	18 58	2 19
22	21 18	4 28	1738	056	1429	2814	1205	2552	9 29	22 52	6 03	19 12	2 33
23	21 31	4 42	1751	109	1442	2827	1218	2605	9 42	23 05	6 16	19 25	2 46
24	2 21 44	3 4 54	31804	4 123	4 1456	4 2841	5 1232	5 2619	6 9 56	6 23 18	7 6 29	7 19 38	8 3 00
25	21 57	5 07	1817	136	1510	2855	1246	2633	10 09	23 31	6 42	19 51	3 13
26	22 11	5 20	1831	150	1524	2909	1300	2647	10 23	23 45	6 55	20 05	3 27
27	22 24	5 33	1844	203	1537	2923	1314	2700	10 36	23 58	7 08	20 18	3 41
28	2 22 37	3 5 46	31857	4 217	4 1551	4 2937	5 1328	5 2714	6 10 49	6 24 11	7 7 21	7 20 31	8 3 54
29	22 50	5 59	1910	230	1605	4 2951	1342	2728	11 02	24 24	7 34	20 44	4 08
30	23 04	6 13	1924	244	1619	5 005	1356	2742	11 16	24 37	7 48	20 58	4 22
31	23 17	6 26	1936	257	1632	019	1409	2755	11 30	24 50	8 01	21 10	4 35
32	2 23 29	3 6 39	31949	4 311	4 1646	5 032	5 1423	5 2809	6 11 43	6 25 03	7 8 14	7 21 23	8 4 49
33	23 42	6 52	2002	324	1700	046	1437	2823	11 56	25 16	8 27	21 36	5 03
34	23 56	7 05	2016	338	1714	100	1451	2837	12 10	25 30	8 40	21 50	5 17
35	24 09	7 18	2029	351	1727	114	1505	2850	12 24	25 43	8 53	22 03	5 30
36	2 24 22	3 7 31	32042	4 404	4 1741	5 128	5 1519	5 2904	6 12 37	6 25 56	7 9 06	7 22 16	8 5 44
37	24 35	7 44	2055	417	1755	142	1533	2918	12 50	26 09	9 19	22 29	5 57
38	24 49	7 58	2109	431	1809	156	1547	2932	13 04	26 23	9 33	22 43	6 11
39	25 02	8 11	2122	444	1822	209	1600	2945	13 18	26 36	9 46	22 56	6 25
40	2 25 15	3 8 24	32135	4 458	4 1836	5 223	5 1614	5 2958	6 13 31	6 26 49	7 9 59	7 23 09	8 6 38
41	25 28	8 37	2148	512	1850	237	1628	6 012	13 44	27 02	10 12	23 22	6 52
42	25 42	8 51	2202	526	1904	251	1642	026	13 58	27 16	10 25	23 36	7 06
43	25 55	9 04	2215	539	1917	304	1655	039	14 12	27 29	10 38	23 49	7 19
44	2 26 08	3 9 17	32228	4 553	4 1931	5 318	5 1709	6 053	6 14 25	6 27 42	7 10 51	7 24 02	8 7 33
45	26 21	9 30	2241	606	1945	332	1723	107	14 38	27 55	11 04	24 15	7 47
46	26 35	9 43	2255	620	1959	346	1737	121	14 52	28 09	11 18	24 29	8 01
47	26 48	9 56	2308	633	2012	400	1750	134	15 06	28 22	11 31	24 43	8 15
48	2 27 01	3 10 09	32321	4 647	4 2025	5 414	5 1804	6 148	6 15 18	6 28 35	7 11 44	7 24 56	8 8 29
49	27 14	10 22	2334	700	2039	428	1818	202	15 31	28 48	11 57	25 09	8 43
50	27 28	10 36	2348	714	2053	442	1832	216	15 45	29 02	12 10	25 23	8 57
51	27 41	10 49	2401	728	2106	456	1845	229	15 59	29 15	12 23	25 36	9 10
52	2 27 54	3 11 02	32415	4 741	4 2120	5 510	5 1859	6 242	6 16 12	6 29 28	7 12 36	7 25 49	8 9 24
53	28 07	11 15	2428	754	2134	524	1913	256	16 25	29 41	12 49	26 02	9 38
54	28 20	11 28	2442	808	2148	538	1927	310	16 39	6 29 55	13 02	26 16	9 52
55	28 33	11 41	2455	822	2201	551	1941	323	16 53	7 0 08	13 15	26 29	10 06
56	2 28 46	3 11 54	32508	4 835	4 2215	5 605	5 1955	6 337	6 17 06	7 0 21	7 13 28	7 26 42	8 10 20
57	28 59	12 07	2521	848	2229	619	2009	351	17 19	0 34	13 41	26 55	10 34
58	29 13	12 21	2535	902	2243	633	2023	405	17 32	0 47	13 55	27 09	10 48
59	29 26	12 34	2548	916	2256	646	2036	418	17 45	1 00	14 08	27 23	11 01
60	2 29 39	3 12 47	32602	4 929	4 2310	5 700	5 2050	6 431	6 17 58	7 1 13	7 14 21	7 27 36	8 11 15

Ascendant for KOLKATA (Latitude 22° 35' North)

(Also for Kharagpur 22°N 30', Indore 22°N 43', Jamnagar 22° N 27' etc.)

Minute	SIDEREAL TIME											
	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	
m	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	
0	8 11 15	8 25 42	9 11 20	9 28 31	10 17 15	11 7 00	11 26 45	0 15 29	1 2 40	1 18 18	2 2 45	
1	11 29	25 57	11 37	28 49	17 35	7 20	27 05	15 47	2 57	18 33	2 59	
2	11 43	26 12	11 53	29 07	17 54	7 40	27 24	16 05	3 13	18 48	3 13	
3	11 57	26 27	12 09	29 25	18 13	8 00	27 43	16 23	3 29	19 03	3 26	
4	8 12 11	8 26 42	9 12 26	9 29 43	10 18 33	11 8 20	11 28 03	0 16 41	1 3 45	1 19 18	2 3 40	
5	12 25	26 57	12 43	10 0 01	18 53	8 40	28 23	16 59	4 01	19 33	3 54	
6	12 40	27 12	12 59	0 19	19 12	9 00	28 42	17 16	4 17	19 48	4 08	
7	12 54	27 28	13 15	0 37	19 31	9 20	29 01	17 34	4 33	20 02	4 22	
8	8 13 08	8 27 43	9 13 32	10 0 56	10 19 51	11 9 40	11 29 20	0 17 52	1 4 49	1 20 17	2 4 36	
9	13 22	27 58	13 49	1 14	20 10	10 00	29 39	18 10	5 06	20 32	4 50	
10	13 36	28 13	14 06	1 32	20 29	10 20	11 29 58	18 27	5 22	20 47	5 04	
11	13 50	28 28	14 22	1 50	20 48	10 39	0 0 17	18 44	5 38	21 01	5 17	
12	8 14 04	8 28 43	9 14 39	10 2 08	10 21 08	11 10 59	0 0 37	0 19 02	1 5 54	1 21 16	2 5 31	
13	14 18	28 58	14 56	2 27	21 28	11 19	0 56	19 20	6 10	21 31	5 45	
14	14 32	29 13	15 13	2 45	21 47	11 39	1 15	19 37	6 26	21 46	6 00	
15	14 46	29 29	15 29	3 03	22 07	11 59	1 34	19 55	6 42	22 00	6 14	
16	8 15 01	8 29 44	9 15 46	10 3 22	10 22 27	11 12 19	0 1 53	0 20 13	1 6 58	1 22 15	2 6 27	
17	15 15	8 29 59	16 03	3 41	22 47	12 39	2 13	20 31	7 14	22 30	6 41	
18	15 30	9 0 14	16 20	3 59	23 06	12 58	2 32	20 48	7 29	22 45	6 55	
19	15 44	0 29	16 36	4 17	23 25	13 18	2 51	21 05	7 45	22 59	7 08	
20	8 15 58	9 0 45	9 16 53	10 4 36	10 23 45	11 13 38	0 3 09	0 21 23	1 8 01	1 23 14	2 7 22	
21	16 12	1 01	17 10	4 55	24 05	13 58	3 28	21 41	8 17	23 29	7 36	
22	16 27	1 16	17 27	5 13	24 24	14 18	3 47	21 58	8 33	23 44	7 50	
23	16 41	1 31	17 44	5 32	24 44	14 38	4 06	22 15	8 49	23 58	8 03	
24	8 16 55	9 1 47	9 18 01	10 5 51	10 25 04	11 14 58	0 4 25	0 22 33	1 9 05	1 24 12	2 8 16	
25	17 10	2 03	18 18	6 10	25 24	15 18	4 44	22 50	9 21	24 27	8 30	
26	17 24	2 18	18 35	6 28	25 44	15 37	5 03	23 08	9 36	24 42	8 44	
27	17 38	2 34	18 52	6 46	26 04	15 57	5 22	23 25	9 52	24 56	8 57	
28	8 17 53	9 2 50	9 19 09	10 7 05	10 26 24	11 16 17	0 5 40	0 23 42	1 10 08	1 25 10	2 9 11	
29	18 07	3 06	19 26	7 24	26 44	16 37	5 59	23 59	10 24	25 24	9 25	
30	18 22	3 21	19 43	7 42	27 03	16 57	6 18	24 17	10 39	25 39	9 39	
31	18 36	3 36	20 00	8 01	27 23	17 17	6 37	24 34	10 54	25 53	9 52	
32	8 18 50	9 3 52	9 20 18	10 8 20	10 27 43	11 17 36	0 6 55	0 24 51	1 11 10	1 26 07	2 10 06	
33	19 05	4 08	20 35	8 39	28 03	17 56	7 14	25 08	11 26	26 22	10 20	
34	19 19	4 24	20 53	8 58	28 22	18 16	7 32	25 25	11 41	26 37	10 34	
35	19 33	4 40	21 10	9 26	28 42	18 36	7 50	25 42	11 56	26 51	10 47	
36	8 19 48	9 4 55	9 21 27	10 9 35	10 29 02	11 18 56	0 8 09	0 25 59	1 12 12	1 27 05	2 11 00	
37	20 03	5 11	21 45	9 54	29 22	19 16	8 28	26 16	12 28	27 19	11 14	
38	20 17	5 27	22 02	10 13	10 29 42	19 36	8 47	26 33	12 43	27 34	11 28	
39	20 31	5 43	22 19	10 32	11 0 02	19 55	9 05	26 50	12 58	27 48	11 41	
40	8 20 46	9 5 59	9 22 37	10 10 51	11 0 22	11 20 15	0 9 24	0 27 07	1 13 14	1 28 02	2 11 54	
41	21 01	6 15	22 55	11 10	0 42	20 35	9 43	27 24	13 30	28 16	12 08	
42	21 16	6 30	23 12	11 29	1 01	20 54	10 01	27 41	13 45	28 31	12 22	
43	21 30	6 46	23 29	11 48	1 21	21 13	10 19	27 57	14 00	28 45	12 35	
44	8 21 45	9 7 02	9 23 47	10 12 07	11 1 41	11 21 33	0 10 38	0 28 14	1 14 16	1 28 59	2 12 48	
45	22 00	7 18	24 05	12 26	2 01	21 53	10 57	28 31	14 31	29 13	13 02	
46	22 15	7 34	24 22	12 45	2 21	22 12	11 15	28 48	14 46	29 28	13 16	
47	22 29	7 50	24 39	13 04	2 41	22 32	11 33	29 04	15 01	29 42	13 29	
48	8 22 44	9 8 06	9 24 58	10 13 23	11 3 01	11 22 52	0 11 52	0 29 21	1 15 17	1 29 56	2 13 42	
49	22 59	8 23	25 16	13 42	3 21	23 11	12 10	29 38	15 32	2 0 10	13 56	
50	23 14	8 39	25 33	14 01	3 40	23 30	12 28	0 29 55	15 47	0 24	14 10	
51	23 28	8 55	25 50	14 20	4 00	23 49	12 46	1 0 11	16 02	0 38	14 23	
52	8 23 43	9 9 11	9 26 08	10 14 40	11 4 20	11 24 09	0 13 04	1 0 28	1 16 17	2 0 52	2 14 36	
53	23 58	9 27	26 26	14 59	4 40	24 29	13 22	0 45	16 32	1 06	14 50	
54	24 13	9 43	26 43	15 18	5 00	24 48	13 40	1 01	16 47	1 21	15 04	
55	24 27	9 59	27 00	15 37	5 20	25 07	13 58	1 17	17 02	1 35	15 17	
56	8 24 42	9 10 15	9 27 19	10 15 57	11 5 40	11 25 27	0 14 17	1 1 34	1 17 18	2 1 49	2 15 30	
57	24 57	10 32	27 37	16 17	6 00	25 47	14 35	1 51	17 33	2 03	15 44	
58	25 12	10 48	27 55	16 36	6 20	26 06	14 53	2 07	17 48	2 17	15 58	
59	25 27	11 04	28 13	16 55	6 40	26 25	15 11	2 23	18 03	2 31	16 11	
60	8 25 42	9 11 20	9 28 31	10 17 15	11 7 00	11 26 45	0 15 29	1 2 40	1 18 18	2 2 45	2 16 24	

Variation in 1 minute (60' Sess.)	0-13'	0-14'	0-15'	0-16'	0-17'	0-18'	0-19'	0-20'
30' Secs.	7'	7'	7'	8'	9'	9'	10'	10'
10' Secs.	2'	2'	3'	3'	3'	3'	3'	3'

Ayanamsa correction for the required year is to be applied to the final result. Correction for the year are given at the end of these Tables.

Ascendant for VARANASI (Latitude 25°19' North)

(Also for Hyderabad (Pak) 25°N22', Allahabad 25°N28'

Minute	SIDEREAL TIME											
	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h
m	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '
0	2 17 42	3 0 49	3 13 47	3 26 50	4 10 03	4 23 28	5 7 00	5 20 32	6 3 57	6 17 10	7 0 13	7 13 11	7 26 18
1	17 55	1 02	14 00	27 03	10 16	23 41	7 13	20 45	4 10	17 23	0 26	13 24	26 31
2	18 09	1 15	14 13	27 16	10 30	23 55	7 27	20 59	4 24	17 34	0 39	13 37	26 45
3	18 22	1 28	14 26	27 29	10 43	24 08	7 40	21 12	4 37	17 47	0 52	13 50	26 58
4	2 18 35	3 1 41	3 14 39	3 27 42	4 10 56	4 24 22	5 7 54	5 21 26	6 4 50	6 18 03	7 1 05	7 14 03	7 27 11
5	18 48	1 54	14 52	27 55	11 09	24 35	8 07	21 39	5 03	18 16	1 18	14 16	27 24
6	19 02	2 07	15 05	28 09	11 23	24 49	8 21	21 53	5 17	18 29	1 31	14 29	27 38
7	19 15	2 20	15 18	28 22	11 37	25 02	8 35	22 06	5 30	18 42	1 44	14 42	27 52
8	2 19 28	3 2 33	3 15 31	3 28 35	4 11 50	4 25 16	5 8 49	5 22 20	6 5 43	6 18 55	7 1 57	7 14 55	7 28 05
9	19 41	2 46	15 44	28 48	12 03	25 29	9 02	22 33	5 56	19 08	2 10	15 08	28 18
10	19 55	2 59	15 57	29 01	12 17	25 43	9 16	22 47	6 10	19 22	2 23	15 21	28 32
11	20 08	3 12	16 10	29 14	12 30	25 56	9 29	23 00	6 23	19 35	2 36	15 34	28 45
12	2 20 21	3 3 25	3 16 23	3 29 27	4 12 43	4 26 10	5 9 43	5 23 14	6 6 37	6 19 48	7 2 49	7 15 47	7 28 58
13	20 34	3 38	16 36	29 40	12 56	26 23	9 56	23 27	6 50	20 00	3 02	16 00	29 11
14	20 48	3 51	16 49	29 54	13 10	26 37	10 10	23 41	7 04	20 13	3 14	16 13	29 25
15	21 01	4 04	17 02	4 007	13 23	26 50	10 23	23 54	7 17	20 26	3 27	16 26	29 39
16	2 21 14	3 4 17	3 17 15	4 020	4 13 36	4 27 04	5 10 37	5 24 08	6 7 30	6 20 40	7 3 40	7 16 39	7 29 52
17	21 27	4 30	17 28	033	13 49	27 17	10 50	24 21	7 43	20 53	3 53	16 52	8 0 05
18	21 40	4 42	17 41	047	14 03	27 31	11 04	24 35	7 56	21 06	4 06	17 06	0 19
19	21 53	4 55	17 54	100	14 16	27 44	11 17	24 48	8 09	21 19	4 19	17 19	0 33
20	2 22 06	3 5 08	3 18 07	4 113	4 14 30	4 27 58	5 11 31	5 25 02	6 8 22	6 21 32	7 4 32	7 17 32	8 0 46
21	22 19	5 21	18 20	126	14 43	28 11	11 44	25 15	8 35	21 45	4 45	17 45	0 59
22	22 33	5 34	18 33	140	14 57	28 25	11 58	25 29	8 49	21 59	4 58	17 58	1 13
23	22 46	5 47	18 46	153	15 10	28 38	12 11	25 42	9 02	22 12	5 11	18 11	1 27
24	2 22 59	3 6 00	3 18 59	4 206	4 15 24	4 28 52	5 12 25	5 25 55	6 9 15	6 22 25	7 5 24	7 18 24	8 1 40
25	23 12	6 13	19 12	219	15 37	29 05	12 38	26 08	9 28	22 38	5 37	18 37	1 53
26	23 26	6 26	19 25	233	15 51	29 19	12 52	26 22	9 42	22 51	5 50	18 50	2 07
27	23 39	6 39	19 38	246	16 04	29 32	13 06	26 35	9 55	23 04	6 03	19 03	2 21
28	2 23 52	3 6 52	3 19 51	4 259	4 16 18	4 29 46	5 13 20	5 26 49	6 10 08	6 23 17	7 6 16	7 19 16	8 2 34
29	24 05	7 05	20 04	312	16 31	29 59	13 33	27 02	10 21	23 30	6 29	19 29	2 47
30	24 18	7 18	20 17	326	16 45	5 013	13 47	27 16	10 35	23 43	6 42	19 42	3 01
31	24 31	7 31	20 30	339	16 58	026	14 00	27 29	10 48	23 56	6 55	19 55	3 15
32	2 24 44	3 7 44	3 20 43	4 352	4 17 11	5 040	5 14 14	5 27 42	6 11 01	6 24 09	7 7 08	7 20 08	8 3 28
33	24 57	7 57	20 56	405	17 24	053	14 27	27 55	11 14	24 22	7 21	20 21	3 41
34	25 10	8 10	21 09	419	17 38	107	14 41	28 09	11 28	24 35	7 34	20 35	3 55
35	25 23	8 23	21 22	432	17 51	121	14 54	28 22	11 41	24 48	7 47	20 48	4 09
36	2 25 36	3 8 36	3 21 35	4 445	4 18 05	5 135	5 15 08	5 28 36	6 11 54	6 25 01	7 8 00	7 21 01	8 4 22
37	25 49	8 49	21 48	458	18 18	148	15 21	28 49	12 07	25 14	8 13	21 14	4 35
38	26 02	9 02	22 02	512	18 32	202	15 35	29 03	12 21	25 27	8 26	21 28	4 49
39	26 15	9 15	22 15	525	18 45	215	15 48	29 16	12 34	25 40	8 39	21 41	5 03
40	2 26 28	3 9 28	3 22 28	4 538	4 18 58	5 229	5 16 02	5 29 30	6 12 47	6 25 53	7 8 52	7 21 54	8 5 17
41	26 41	9 41	22 41	551	19 11	242	16 15	29 43	13 00	26 06	9 05	22 07	5 30
42	26 55	9 54	22 54	604	19 25	256	16 29	29 57	13 14	26 19	9 17	22 20	5 44
43	27 08	10 07	23 07	617	19 38	309	16 42	6 010	13 27	26 32	9 30	22 33	5 58
44	2 27 21	3 10 20	3 23 20	4 630	4 19 52	5 323	5 16 56	6 024	6 13 40	6 26 45	7 9 43	7 22 46	8 6 11
45	27 34	10 33	23 33	643	20 05	336	17 09	037	13 53	26 58	9 56	22 59	6 25
46	27 47	10 45	23 46	657	20 19	350	17 23	051	14 07	27 11	10 09	23 13	6 38
47	28 00	10 58	23 59	710	20 32	403	17 36	104	14 20	27 24	10 22	23 26	6 52
48	2 28 13	3 11 11	3 24 12	4 723	4 20 46	5 417	5 17 50	6 117	6 14 33	6 27 37	7 10 35	7 23 39	8 7 06
49	28 26	11 24	24 25	736	20 59	430	18 03	130	14 46	27 50	10 48	23 52	7 20
50	28 39	11 37	24 39	750	21 13	444	18 17	144	14 59	28 03	11 01	24 06	7 33
51	28 52	11 50	24 52	804	21 27	457	18 40	157	15 12	28 16	11 14	24 19	7 47
52	2 29 05	3 12 03	3 25 05	4 817	4 21 40	5 511	5 18 44	6 210	6 15 25	6 28 29	7 11 27	7 24 32	8 8 01
53	29 18	12 15	25 18	830	21 53	524	18 57	223	15 38	28 42	11 40	24 45	8 15
54	29 31	12 28	25 31	844	22 07	538	19 11	237	15 52	28 55	11 53	24 59	8 29
55	29 44	12 41	25 44	857	22 21	552	19 24	250	16 05	29 08	12 06	25 12	8 43
56	2 29 57	3 12 55	3 25 57	4 910	4 22 34	5 606	5 19 38	6 304	6 16 18	6 29 21	7 21 19	7 25 25	8 8 57
57	3 0 10	13 08	26 10	923	22 47	619	19 51	317	16 31	29 34	12 32	25 38	9 11
58	0 23	13 21	26 24	937	23 01	633	20 05	331	16 44	29 47	12 45	25 52	9 24
59	0 36	13 34	26 37	950	23 14	646	20 18	344	16 57	7 0 00	12 58	26 05	9 38
60	3 0 49	3 13 47	3 26 50	4 10 03	4 23 28	5 7 00	5 20 32	6 3 57	6 17 10	7 0 13	7 13 11	7 26 18	8 9 52

Ascendant for VARANASI (Latitude 25°19' North)

(Also for Hyderabad (Pak) 25°N22', Allahabad 25°N28')

Minute	SIDEREAL TIME											
	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	
m	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	s ° '	
0	8 9 52	8 24 18	9 10 02	9 27 28	10 16 38	11 7 00	11 27 22	0 16 32	1 3 58	1 19 42	2 4 08	
1	10 06	24 33	10 18	27 46	16 58	7 20	27 42	16 50	4 14	19 57	4 22	
2	10 20	24 48	10 35	28 05	17 18	7 41	28 02	17 09	4 31	20 12	4 35	
3	10 34	25 03	10 52	28 23	17 38	8 02	28 22	17 27	4 48	20 27	4 49	
4	8 10 48	8 25 18	9 11 09	9 28 41	10 17 58	11 8 22	11 28 42	0 17 45	1 5 04	1 20 42	2 5 03	
5	11 02	25 33	11 25	28 59	18 18	8 42	29 02	18 03	5 20	20 57	5 17	
6	11 16	25 49	11 42	29 18	18 38	9 01	29 21	18 22	5 37	21 11	5 31	
7	11 30	26 04	11 59	29 37	18 58	9 22	29 41	18 40	5 53	21 26	5 45	
8	8 11 44	8 26 19	9 12 16	9 29 55	10 19 18	11 9 45	0 0 01	0 18 58	1 6 09	1 21 41	2 5 59	
9	11 58	26 35	12 32	10 0 13	19 38	10 05	0 21	19 16	6 25	21 56	6 13	
10	12 13	26 51	12 49	0 32	19 59	10 26	0 40	19 34	6 42	22 10	6 26	
11	12 37	27 06	13 06	0 51	20 19	10 47	1 00	19 52	6 58	22 25	6 40	
12	8 12 41	8 27 20	9 13 23	10 1 09	10 20 39	11 11 07	0 1 20	0 20 10	1 7 14	1 22 40	2 6 54	
13	12 55	27 35	13 39	1 27	20 59	11 27	1 40	20 28	7 30	22 55	7 08	
14	13 09	27 51	13 56	1 46	21 19	11 38	1 59	20 46	7 47	23 09	7 21	
15	13 23	28 06	14 13	2 05	21 39	11 59	2 18	21 04	8 03	23 24	7 35	
16	8 13 37	8 28 21	9 14 30	10 2 24	10 21 59	11 12 30	0 2 38	0 21 22	1 8 19	1 23 39	2 7 49	
17	13 51	28 36	14 47	2 43	22 19	12 50	2 58	21 40	8 35	23 54	8 03	
18	14 06	28 52	15 04	3 02	22 40	13 11	3 17	21 57	8 51	24 08	8 16	
19	14 20	29 08	15 21	3 21	23 00	13 32	3 36	22 15	9 07	24 23	8 29	
20	8 14 34	8 29 23	9 15 38	10 3 40	10 23 20	11 13 52	0 3 56	0 22 33	1 9 23	1 24 38	2 8 43	
21	14 48	29 38	15 55	3 59	23 40	14 12	4 16	22 51	9 39	24 53	8 57	
22	15 03	29 54	16 13	4 18	24 01	14 33	4 35	23 08	9 55	25 07	9 10	
23	15 17	9 0 10	16 30	4 37	24 22	14 53	4 54	23 26	10 11	25 21	9 24	
24	8 15 31	9 0 25	9 16 47	10 4 56	10 24 42	11 15 13	0 5 14	0 23 44	1 10 27	1 25 36	2 9 38	
25	15 45	0 40	17 04	5 15	25 02	15 33	5 34	24 02	10 43	25 51	9 52	
26	16 01	0 56	17 22	5 34	25 23	15 54	5 53	24 19	10 58	26 05	10 05	
27	16 15	1 12	17 39	5 53	25 43	16 15	6 12	24 36	11 14	26 19	10 18	
28	8 16 29	9 1 27	9 17 56	10 6 12	10 26 03	11 16 35	0 6 31	0 24 54	1 11 30	1 26 34	2 10 32	
29	16 43	1 42	18 13	6 31	26 23	16 55	6 50	25 12	11 46	26 49	10 46	
30	16 58	1 58	18 31	6 51	26 44	17 16	7 10	25 29	12 01	27 03	10 59	
31	17 12	2 14	18 49	*7 10	27 05	17 37	7 29	25 46	12 17	27 17	11 12	
32	8 17 26	9 2 30	9 19 06	10 7 29	10 27 25	11 17 57	0 7 48	0 26 04	1 12 33	1 27 31	2 11 26	
33	17 40	2 45	19 23	7 48	27 45	18 17	8 07	26 22	12 49	27 45	11 40	
34	17 55	3 01	19 41	8 08	28 06	18 38	8 26	26 39	13 04	28 00	11 53	
35	18 10	3 17	19 59	8 27	28 27	18 58	8 45	26 56	13 19	28 15	12 06	
36	8 18 24	9 3 33	9 20 16	10 8 46	10 28 47	11 19 18	0 9 04	0 27 13	1 13 35	1 28 29	2 12 20	
37	18 38	3 49	20 33	9 05	29 07	19 38	9 23	27 31	13 51	28 44	12 34	
38	18 53	4 05	20 51	9 25	29 28	19 59	9 42	27 48	14 06	28 58	12 47	
39	19 08	4 21	21 09	9 45	29 49	20 20	10 01	28 05	14 21	29 12	13 00	
40	8 19 22	9 4 37	9 21 27	10 10 04	11 0 09	11 20 40	0 10 20	0 28 22	1 14 37	1 29 26	2 13 14	
41	19 36	4 53	21 44	10 23	0 29	21 00	10 39	28 39	14 53	29 40	13 28	
42	19 51	5 09	22 02	10 43	0 50	21 21	10 58	28 56	15 08	29 55	13 41	
43	20 06	5 25	22 20	11 03	1 11	21 41	11 17	29 13	15 23	2 0 09	13 54	
44	8 20 21	9 5 41	9 22 38	10 11 22	11 1 31	11 22 01	0 11 36	0 29 30	1 15 39	2 0 23	2 14 08	
45	20 35	5 57	22 56	11 41	1 51	22 21	11 55	29 47	15 55	0 37	14 22	
46	20 50	6 14	23 14	12 01	2 12	22 41	12 14	1 0 03	16 10	0 51	14 35	
47	21 05	6 30	23 32	12 21	2 33	23 01	12 32	0 20	16 25	1 05	14 48	
48	8 21 20	9 6 46	9 23 50	10 12 40	11 2 53	11 23 21	0 12 51	1 0 37	1 16 40	2 1 19	2 15 02	
49	21 35	7 02	24 08	12 59	3 13	23 41	13 10	0 54	16 55	1 33	15 16	
50	21 49	7 19	24 26	13 19	3 34	24 02	13 28	1 10	17 11	1 48	15 29	
51	22 04	7 35	24 44	13 39	3 55	24 22	13 47	1 27	17 26	2 02	15 42	
52	8 22 19	9 7 51	9 25 02	10 13 59	11 4 15	11 24 42	0 14 05	1 1 44	1 17 41	2 2 16	2 15 55	
53	22 34	8 07	25 20	14 18	4 35	25 02	14 23	2 01	17 56	2 30	16 08	
54	22 48	8 24	25 39	14 38	4 56	25 22	14 42	2 17	18 12	2 44	16 22	
55	23 03	8 40	25 57	14 58	5 17	25 42	15 01	2 34	18 27	2 58	16 36	
56	8 23 18	9 8 56	9 26 15	10 15 18	11 5 38	11 26 02	0 15 19	1 2 51	1 18 42	2 3 12	2 16 49	
57	23 33	9 12	26 33	15 38	5 58	26 22	15 37	3 08	18 57	3 26	17 02	
58	23 48	9 29	26 52	15 58	6 19	26 42	15 56	3 24	19 12	3 40	17 16	
59	24 03	9 46	27 10	16 18	6 40	27 02	16 14	3 41	19 27	3 54	17 29	
60	8 24 18	9 10 02	9 27 28	10 16 38	11 7 00	11 27 22	0 16 32	1 3 58	1 19 42	2 4 08	2 17 42	

Variation in 1 minute	0-13'	0-14'	0-15'	0-16'	0-17'	0-18'	0-19'	0-20'	0-21'	0-22'
(60s Secs.)										
" in 30s Secs.	7'	7'	8"	8'	8'	9'	10'	10'	11'	11'
" in 10s Secs.	2'	2'	2'	3'	3'	3'	3'	3'	4'	4'

Ayanamsa correction for the required year is to be applied to the final result. Correction for the year are given at the end of these Tables.

Ascendant for DELHI (Latitude 28° 39' North)

For all Places in or near 28°39' N latitude.

Minute	SIDEREAL TIME											
	0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h
m	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '
0	2 19 16	3 2 13	3 14 59	3 27 46	4 10 42	4 23 48	5 7 00	5 20 12	6 3 18	6 16 14	6 29 01	7 11 47	7 24 44
1	19 29	2 26	15 12	27 59	10 55	24 01	7 13	20 25	3 31	16 27	29 14	12 00	24 57
2	19 42	2 39	15 25	28 12	11 09	24 15	7 27	20 38	3 44	16 40	29 27	12 13	25 11
3	19 55	2 51	15 37	28 25	11 22	24 28	7 40	20 51	3 57	16 52	29 39	12 25	25 24
4	2 20 08	3 3 04	3 15 50	3 28 38	4 11 35	4 24 41	5 7 53	5 21 04	6 4 10	6 17 05	6 29 52	7 12 38	7 25 37
5	20 21	3 17	16 03	28 51	11 48	24 54	8 06	21 17	4 23	17 18	7 0 05	12 51	25 50
6	20 35	3 30	16 16	29 04	12 01	25 07	8 19	21 31	4 36	17 31	0 18	13 04	26 04
7	20 48	3 42	16 28	29 17	12 14	25 20	8 32	21 44	4 49	17 43	0 30	13 16	26 17
8	2 21 01	3 3 55	3 16 41	3 29 29	4 12 27	4 25 33	5 8 45	5 21 57	6 5 02	6 17 56	7 0 43	7 13 29	7 26 30
9	21 14	4 08	16 54	29 42	12 40	25 46	8 58	22 10	5 15	18 09	0 56	13 42	26 43
10	21 27	4 21	17 07	3 29 55	12 53	26 00	9 12	22 24	5 28	18 22	1 09	13 55	26 57
11	21 40	4 33	17 19	4 0 07	13 06	26 13	9 25	22 37	5 41	18 35	1 21	14 08	27 10
12	2 21 53	3 4 46	3 17 32	4 0 20	4 13 19	4 26 26	5 9 38	5 22 50	6 5 54	6 18 48	7 1 34	7 14 21	7 27 23
13	22 06	4 59	17 45	0 33	13 32	26 39	9 52	23 03	6 07	19 01	1 47	14 34	27 36
14	22 19	5 12	17 58	0 46	13 45	26 53	10 06	23 16	6 20	19 14	2 00	14 47	27 50
15	22 32	5 25	18 10	0 59	13 58	27 06	10 19	23 29	6 33	19 26	2 12	14 59	28 03
16	2 22 45	3 5 38	3 18 23	4 1 12	4 14 11	4 27 19	5 10 32	5 23 42	6 6 46	6 19 39	7 2 25	7 15 12	7 28 16
17	22 58	5 51	18 36	1 25	14 24	27 32	10 45	23 55	6 59	19 52	2 38	15 25	28 29
18	23 11	6 04	18 49	1 38	14 38	27 46	10 59	24 09	7 12	20 05	2 51	15 38	28 43
19	23 24	6 16	19 01	1 51	14 51	27 59	11 12	24 22	7 25	20 18	3 03	15 51	28 56
20	2 23 37	3 6 29	3 19 14	4 2 04	4 15 04	4 28 12	5 11 25	5 24 35	6 7 38	6 20 31	7 3 16	7 16 04	7 29 09
21	23 50	6 42	19 27	2 17	15 17	28 25	11 38	24 48	7 51	20 44	3 29	16 17	29 22
22	24 03	6 55	19 40	2 30	15 30	28 39	11 51	25 01	8 04	20 57	3 42	16 30	29 36
23	24 16	7 07	19 52	2 42	15 43	28 52	12 04	25 14	8 16	21 09	3 54	16 42	7 29 49
24	2 24 29	3 7 20	3 20 05	4 2 55	4 15 56	4 29 05	5 12 17	5 25 27	6 8 29	6 21 22	7 4 07	7 16 55	8 0 02
25	24 42	7 33	20 18	3 08	16 09	29 18	12 30	25 40	8 42	21 35	4 20	17 08	0 15
26	24 55	7 46	20 31	3 21	16 22	29 31	12 44	25 54	8 55	21 48	4 33	17 21	0 29
27	25 08	7 58	20 43	3 34	16 35	29 44	12 57	26 07	9 08	22 00	4 45	17 34	0 42
28	2 25 21	3 8 11	3 20 56	4 3 47	4 16 48	4 29 57	5 13 10	5 26 20	6 9 21	6 22 13	7 4 58	7 17 47	8 0 56
29	25 34	8 24	21 09	4 00	17 01	5 0 10	13 23	26 33	9 34	22 26	5 11	18 00	1 09
30	25 47	8 37	21 22	4 13	17 14	0 24	13 37	26 46	9 47	22 39	5 24	18 13	1 23
31	26 00	8 49	21 34	4 26	17 27	0 37	13 50	26 59	10 00	22 51	5 36	18 36	1 36
32	2 26 13	3 9 02	3 21 47	4 4 39	4 17 40	5 0 50	5 14 03	5 27 12	6 10 13	6 23 04	7 5 49	7 18 39	8 1 49
33	26 26	9 15	22 00	4 52	17 53	1 03	14 16	27 25	10 26	23 17	6 02	18 52	2 02
34	26 39	9 28	22 13	5 05	18 07	1 17	14 29	27 38	10 39	23 30	6 15	19 05	2 16
35	26 52	9 40	22 25	5 18	18 20	1 30	14 42	27 51	10 52	23 42	6 27	19 18	2 29
36	2 27 05	3 9 53	3 22 38	4 5 31	4 18 33	5 1 43	5 14 55	5 28 04	6 11 05	6 23 55	7 6 40	7 19 31	8 2 43
37	27 18	10 06	22 51	5 44	18 46	1 56	15 08	28 17	11 18	24 08	6 53	19 44	2 56
38	27 31	10 19	23 04	5 57	18 59	2 09	15 22	28 30	11 31	24 21	7 06	19 57	3 10
39	27 43	10 31	23 16	6 09	19 12	2 22	15 35	28 43	11 43	24 33	7 18	20 10	3 23
40	2 27 56	3 10 44	3 23 29	4 6 22	4 19 25	5 2 35	5 15 48	5 28 56	6 11 56	6 24 46	7 7 31	7 20 23	8 3 37
41	28 09	10 57	23 42	6 35	19 38	2 48	16 01	29 09	12 09	24 59	7 44	20 36	3 50
42	28 22	11 10	23 55	6 48	19 52	3 02	16 15	29 23	12 22	25 12	7 57	20 49	4 04
43	28 35	11 22	24 08	7 01	20 05	3 15	16 28	29 36	12 35	25 24	8 09	21 02	4 18
44	2 28 48	3 11 35	3 24 21	4 7 14	4 20 18	5 3 28	5 16 41	5 29 49	6 12 48	6 25 37	7 8 22	7 21 15	8 4 32
45	29 01	11 48	24 34	7 27	20 31	3 41	16 54	6 0 02	13 01	25 50	8 35	21 28	4 45
46	29 14	12 01	24 47	7 40	20 44	3 55	17 08	0 15	13 14	26 03	8 48	21 41	4 59
47	29 26	12 13	24 59	7 53	20 57	4 08	17 21	0 28	13 27	26 15	9 00	21 54	5 12
48	2 29 39	3 12 26	3 25 12	4 8 06	4 21 10	5 4 22	5 17 34	6 0 41	6 13 40	6 26 28	7 9 14	7 22 07	8 5 26
49	2 29 52	12 39	25 25	8 19	21 23	4 35	17 47	0 54	13 53	26 41	9 27	22 20	5 39
50	3 0 05	12 52	25 38	8 32	21 37	4 49	18 01	1 07	14 06	26 54	9 40	22 33	5 53
51	0 18	13 04	25 51	8 45	21 50	5 02	18 14	1 20	14 18	27 06	9 52	22 46	6 07
52	3 0 31	3 13 17	3 26 04	4 8 58	4 22 03	5 5 15	5 18 27	6 1 33	6 14 31	6 27 19	7 10 05	7 22 59	8 6 21
53	0 44	13 30	26 17	9 11	22 16	5 28	18 40	1 46	14 44	27 32	10 18	23 12	6 34
54	0 57	13 43	26 30	9 24	22 30	5 41	18 53	1 59	14 57	27 45	10 31	23 26	6 48
55	1 09	13 55	26 42	9 37	22 43	5 54	19 06	2 12	15 09	27 57	10 43	23 39	7 02
56	3 1 22	3 14 08	3 26 55	4 9 50	4 22 56	5 6 07	5 19 19	6 2 25	6 15 22	6 28 10	7 10 56	7 23 52	8 7 16
57	1 35	14 21	27 08	10 03	23 09	6 20	19 32	2 38	15 35	28 23	11 09	24 05	7 29
58	1 48	14 34	27 21	10 16	23 22	6 34	19 46	2 52	15 48	28 36	11 22	24 18	7 43
59	2 00	14 46	27 33	10 29	23 35	6 47	19 59	3 05	16 01	28 48	11 34	24 31	7 57
60	3 2 13	3 14 59	3 27 46	4 10 42	4 23 48	5 7 00	5 20 12	6 3 18	6 16 14	6 29 01	7 11 47	7 24 44	8 8 11

Ascendant for DELHI (Latitude 28°39' North)

For all Places in or near 28°39' N latitude.

Minute	SIDEREAL TIME										
	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h
m	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '	s o '
0	8 8 11	8 22 34	9 8 23	9 26 05	10 15 51	11 7 00	11 28 09	0 17 55	1 5 37	1 21 26	2 5 49
1	8 25	22 51	8 40	26 24	16 12	7 22	28 30	18 14	5 54	21 41	6 03
2	8 39	23 06	8 57	26 43	16 33	7 43	28 51	18 33	6 11	21 56	6 17
3	8 52	23 20	9 13	27 02	16 53	8 04	29 11	18 51	6 27	22 10	6 30
4	8 9 06	8 23 35	9 9 30	9 27 21	10 17 14	11 8 26	11 29 32	0 19 10	1 6 44	1 22 25	2 6 44
5	9 20	23 50	9 47	27 40	17 35	8 47	11 29 52	19 29	7 01	22 40	6 58
6	9 34	24 05	10 04	27 59	17 56	9 08	0 0 13	19 47	7 17	22 55	7 12
7	9 48	24 20	10 20	28 18	18 16	9 29	0 33	20 05	7 33	23 10	7 25
8	8 10 02	8 24 35	9 10 37	9 28 37	10 18 37	11 9 51	0 0 54	0 20 24	1 7 50	1 23 25	2 7 39
9	10 16	24 50	10 54	28 56	18 58	10 13	1 14	20 42	8 07	23 40	7 53
10	10 30	25 05	11 11	29 15	19 19	10 34	1 35	21 00	8 23	23 55	8 07
11	10 44	25 21	11 28	29 34	19 39	10 55	1 55	21 18	8 39	24 09	8 20
12	8 10 58	8 25 36	9 11 45	9 29 53	10 20 00	11 11 17	0 2 15	0 21 37	1 8 55	1 24 24	2 8 34
13	11 12	25 52	12 02	10 0 12	20 21	11 39	2 35	21 55	9 11	24 39	8 48
14	11 27	26 07	12 20	0 31	20 42	12 00	2 56	22 13	9 27	24 54	9 02
15	11 41	26 22	12 37	0 50	21 03	12 21	3 16	22 31	9 43	25 08	9 15
16	8 11 55	8 26 38	9 12 54	10 1 10	10 21 24	11 12 43	0 3 36	0 22 50	1 10 00	1 25 23	2 9 28
17	12 09	26 54	13 12	1 29	21 45	13 04	3 56	23 08	10 16	25 38	9 42
18	12 23	27 09	13 29	1 48	22 06	13 25	4 17	23 26	10 32	25 53	9 56
19	12 37	27 24	13 46	2 07	22 27	13 46	4 37	23 44	10 48	26 07	10 09
20	8 12 51	8 27 40	9 14 04	10 2 27	10 22 48	11 14 08	0 4 57	0 24 03	1 11 05	1 26 21	2 10 23
21	13 05	27 56	14 21	2 47	23 09	14 30	5 17	24 21	11 21	26 36	10 37
22	13 20	28 11	14 39	3 06	23 30	14 51	5 37	24 39	11 37	26 51	10 51
23	13 34	28 26	14 56	3 25	23 51	15 12	5 57	24 57	11 53	27 05	11 04
24	8 13 48	8 28 42	9 15 13	10 3 44	10 24 12	11 15 34	0 6 17	0 25 15	1 12 09	1 27 19	2 11 17
25	14 02	28 58	15 31	4 04	24 33	15 55	6 37	25 33	12 25	27 34	11 30
26	14 17	29 13	15 49	4 24	24 54	16 16	6 57	25 51	12 40	27 49	11 44
27	14 31	29 28	16 07	4 44	25 15	16 37	7 17	26 09	12 56	28 03	11 57
28	8 14 45	8 29 44	9 16 24	10 5 04	10 25 37	11 16 58	0 7 37	0 26 26	1 13 12	1 28 17	2 12 11
29	15 00	9 0 00	16 42	5 24	25 58	17 19	7 57	26 44	13 28	28 32	12 24
30	15 15	0 16	16 59	5 44	26 19	17 40	8 17	27 01	13 43	28 47	12 38
31	15 29	0 31	17 16	6 04	26 40	18 01	8 37	27 19	13 59	29 01	12 51
32	8 15 43	9 0 47	9 17 34	10 6 23	10 27 02	11 18 23	0 8 56	0 27 36	1 14 15	1 29 15	2 13 04
33	15 58	1 03	17 52	6 43	27 23	18 44	9 16	27 54	14 31	29 29	13 17
34	16 13	1 19	18 10	7 03	27 44	19 05	9 35	28 12	14 46	29 43	13 31
35	16 27	1 35	18 28	7 23	28 05	19 26	9 54	28 30	15 02	1 29 57	13 44
36	8 16 41	9 1 51	9 18 45	10 7 43	10 28 27	11 19 48	0 10 14	0 28 47	1 15 18	2 0 12	2 13 58
37	16 56	2 07	19 03	8 03	28 48	20 09	10 33	29 04	15 34	0 26	14 11
38	17 11	2 23	19 21	8 23	29 09	20 30	10 53	29 22	15 50	0 40	14 25
39	17 25	2 39	19 39	8 43	29 30	20 51	11 12	29 39	16 04	0 54	14 38
40	8 17 39	9 2 55	9 19 57	10 9 03	10 29 52	11 21 12	0 11 32	0 29 56	1 16 20	2 1 09	2 14 51
41	17 54	3 12	20 15	9 23	11 0 13	21 33	11 52	0 14	16 36	1 23	15 04
42	18 09	3 28	20 33	9 44	0 34	21 54	12 11	0 31	16 51	1 37	15 18
43	18 23	3 44	20 52	10 04	0 55	22 15	12 30	0 48	17 06	1 51	15 31
44	8 18 37	9 4 00	9 21 10	10 10 24	11 1 17	11 22 36	0 12 50	1 1 06	1 17 22	2 2 05	2 15 44
45	18 52	4 17	21 29	10 44	1 39	22 57	13 09	1 23	17 38	2 19	15 57
46	19 07	4 33	21 47	11 05	2 00	23 18	13 28	1 41	17 53	2 34	16 11
47	19 21	4 49	22 05	11 25	2 21	23 39	13 47	1 58	18 08	2 48	16 24
48	8 19 36	9 5 05	9 22 23	10 11 45	11 2 43	11 24 00	0 14 07	1 2 15	1 18 24	2 3 02	2 16 37
49	19 51	5 22	22 41	12 05	3 05	24 21	14 26	2 32	18 39	3 16	16 50
50	20 06	5 38	22 59	12 26	3 26	24 42	14 45	2 49	18 54	3 30	17 04
51	20 20	5 54	23 18	12 46	3 47	25 02	15 04	3 06	19 10	3 44	17 17
52	8 20 35	9 6 10	9 23 36	10 13 06	11 4 09	11 25 23	0 15 23	1 3 23	1 19 25	2 3 58	2 17 30
53	20 50	6 27	23 55	13 26	4 30	25 44	15 42	3 40	19 40	4 12	17 43
54	21 05	6 43	24 13	13 47	4 51	26 05	16 01	3 57	19 55	4 26	17 57
55	21 20	6 59	24 31	14 07	5 12	26 25	16 20	4 13	20 10	4 40	18 10
56	8 21 35	9 7 16	9 24 50	10 14 28	11 5 34	11 26 46	0 16 39	1 4 30	1 20 25	2 4 54	2 18 23
57	21 50	7 33	25 09	14 49	5 56	27 07	16 58	4 47	20 40	5 08	18 36
58	22 05	7 50	25 27	15 10	6 17	27 28	17 17	5 04	20 55	5 22	18 50
59	22 19	8 06	25 46	15 30	6 38	27 48	17 36	5 20	21 10	5 35	19 03
60	8 22 34	9 8 23	9 26 05	10 15 51	11 7 00	11 28 09	0 17 55	1 5 37	1 21 26	2 5 49	2 19 16

Variation in 1 minute (60')	Secs.)	0-13'	0-14'	0-15'	0-16'	0-17'	0-18'	0-19'	0-20'	0-21'	0-22'
" in 30'	Secs.	2'	2'	2'	3'	3'	3'	3'	3'	3'	4'
" in 10'	Secs.	7'	7'	8'	8'	8'	9'	10'	10'	11'	11'

Ayanamsa correction for the required year is to be applied to the final result. Correction for the year are given at the end of these Tables.

REDUCTION OF LOCAL MEAN TIME OF A PLACE INTO THE INDIAN STANDARD TIME ACCORDING TO LONGITUDE OF PLACE

CORRECTION TO BE ADDED TO L.M.T. TO OBTAIN I.S.T.

Longitude of Place (East of Greenwich)																
'	67°	68°	69°	70°	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	81°	82°
	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0	62.0	58.0	54.0	50.0	46.0	42.0	38.0	34.0	30.0	26.0	22.0	18.0	14.0	10.0	6.0	2.0
3	61.8	57.8	53.8	49.8	45.8	41.8	37.8	33.8	29.8	25.8	21.8	17.8	13.8	9.8	5.8	1.8
6	61.6	57.6	53.6	49.6	45.6	41.6	37.6	33.6	29.6	25.6	21.6	17.6	13.6	9.6	5.6	1.6
9	61.4	57.4	53.4	49.4	45.4	41.4	37.4	33.4	29.4	25.4	21.4	17.4	13.4	9.4	5.4	1.4
12	61.2	57.2	53.2	49.2	45.2	41.2	37.2	33.2	29.2	25.2	21.2	17.2	13.2	9.2	5.2	1.2
15	61.0	57.0	53.0	49.0	45.0	41.0	37.0	33.0	29.0	25.0	21.0	17.0	13.0	9.0	5.0	1.0
18	60.8	56.8	52.8	48.8	44.8	40.8	36.8	32.8	28.8	24.8	20.8	16.8	12.8	8.8	4.8	0.8
21	60.6	56.6	52.6	48.6	44.6	40.6	36.6	32.6	28.6	24.6	20.6	16.6	12.6	8.6	4.6	0.6
24	60.4	56.4	52.4	48.4	44.4	40.4	36.4	32.4	28.4	24.4	20.4	16.4	12.4	8.4	4.4	0.4
27	60.2	56.2	52.2	48.2	44.2	40.2	36.2	32.2	28.2	24.2	20.2	16.2	12.2	8.2	4.2	0.2
30	60.0	56.0	52.0	48.0	44.0	40.0	36.0	32.0	28.0	24.0	20.0	16.0	12.0	8.0	4.0	0.0
33	59.8	55.8	51.8	47.8	43.8	39.8	35.8	31.8	27.8	23.8	19.8	15.8	11.8	7.8	3.8	
36	59.6	55.6	51.6	47.6	43.6	39.6	35.6	31.6	27.6	23.6	19.6	15.6	11.6	7.6	3.6	
39	59.4	55.4	51.4	47.4	43.4	39.4	35.4	31.4	27.4	23.4	19.4	15.4	11.4	7.4	3.4	
42	59.2	55.2	51.2	47.2	43.2	39.2	35.2	31.2	27.2	23.2	19.2	15.2	11.2	7.2	3.2	
45	59.0	55.0	51.0	47.0	43.0	39.0	35.0	31.0	27.0	23.0	19.0	15.0	11.0	7.0	3.0	
48	58.8	54.8	50.8	46.8	42.8	38.8	34.8	30.8	26.8	22.8	18.8	14.8	10.8	6.8	2.8	
51	58.6	54.6	50.6	46.6	42.6	36.6	34.6	30.6	26.6	22.6	18.6	14.6	10.6	6.6	2.6	
54	58.4	54.4	50.4	46.4	42.4	38.4	34.4	30.4	26.4	22.4	18.4	14.4	10.4	6.4	2.4	
57	58.2	54.2	50.2	46.2	42.2	38.2	34.2	30.2	26.2	22.2	18.2	14.2	10.2	6.2	2.2	
60	58.0	54.0	50.0	46.0	42.0	38.0	34.0	30.0	26.0	22.0	18.0	14.0	10.0	6.0	2.0	

CORRECTION TO BE SUBTRACTED TO L.M.T. TO OBTAIN I.S.T.

Longitude of Place (East of Greenwich)																
	82°	83°	84°	85°	86°	87°	88°	89°	90°	91°	92°	93°	94°	95°	96°	97°
'	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0		2.0	6.0	10.0	14.0	18.0	22.0	26.0	30.0	34.0	38.0	42.0	46.0	50.0	54.0	58.0
3		2.2	6.2	10.2	14.2	18.2	22.2	26.2	30.2	34.2	38.2	42.2	46.2	50.2	54.2	58.2
6		2.4	6.4	10.4	14.4	18.4	22.4	26.4	30.4	34.4	38.4	42.4	46.4	50.4	54.4	58.4
9		2.6	6.6	10.6	14.6	18.6	22.6	26.6	30.6	34.6	38.6	42.6	46.6	50.6	54.6	58.6
12		2.8	6.8	10.8	14.8	18.8	22.8	26.8	30.8	34.8	38.8	42.8	46.8	50.8	54.8	58.8
15		3.0	7.0	11.0	15.0	19.0	23.0	27.0	31.0	35.0	39.0	43.0	47.0	51.0	55.0	59.0
18		3.2	7.2	11.2	15.2	19.2	23.2	27.2	31.2	35.2	39.2	43.2	47.2	51.2	55.2	59.2
21		3.4	7.4	11.4	15.4	19.4	23.4	27.4	31.4	35.4	39.4	43.4	47.4	51.4	55.4	59.4
24		3.6	7.6	11.6	15.6	19.6	23.6	27.6	31.6	35.6	39.6	43.6	47.6	51.6	55.6	59.6
27		3.8	7.8	11.8	15.8	19.8	23.8	27.8	31.8	35.8	39.8	43.8	47.8	51.8	55.8	59.8
30	0.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0	52.0	56.0	60.0
33	0.2	4.2	8.2	12.2	16.2	20.2	24.2	28.2	32.2	36.2	40.2	44.2	48.2	52.2	56.2	60.2
36	0.4	4.4	8.4	12.4	16.4	20.4	24.4	28.4	32.4	36.4	40.4	44.4	48.4	52.4	56.4	60.4
39	0.6	4.6	8.6	12.6	16.6	20.6	24.6	28.6	32.6	36.6	40.6	44.6	48.6	52.6	56.6	60.6
42	0.8	4.8	8.8	12.8	16.8	20.8	24.8	28.8	32.8	36.8	40.8	44.8	48.8	52.8	56.8	60.8
45	1.0	5.0	9.0	13.0	17.0	21.0	25.0	29.0	33.0	37.0	41.0	45.0	49.0	53.0	57.0	61.0
48	1.2	5.2	9.2	13.2	17.2	21.2	25.2	29.2	33.2	37.2	41.2	45.2	49.2	53.2	57.2	61.2
51	1.4	5.4	9.4	13.4	17.4	21.4	25.4	29.4	33.4	37.4	41.4	45.4	49.4	53.4	57.4	61.4
54	1.6	5.6	9.6	13.6	17.6	21.6	25.6	29.6	33.6	37.6	41.6	45.6	49.6	53.6	57.6	61.6
57	1.8	5.8	9.8	13.8	17.8	21.8	25.8	29.8	33.8	37.8	41.8	45.8	49.8	53.8	57.8	61.8
60	2.0	6.0	10.0	14.0	18.0	22.0	26.0	30.0	34.0	38.0	42.0	46.0	50.0	54.0	58.0	62.0

Latitude, Longitude and Local Time corrections of principal cities in India

The following table gives the latitude and longitude of principal cities along with the Local Time correction, *viz*, the reduction of Indian Standard Time to get the corresponding local mean time of the place.The local mean time (L.M.T.) is required in determining the sidereal time of a moment which is utilised in finding the Ascendant *(lagna)* and the tenth house *(Dasama)*.

The corrections in the last column when applied to the sidereal time as obtained in the daily Ephemeris will give the sidereal time for 12*h* noon L.M.T. of the place in question. When the Greenwich time for any day is available, the corrections are to be diminished by 54 secs. before applying the same to the Greenwich sidereal time.

PLACE			Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
			°	'	°	'	m	s	m	s
Abu (Infrared Obsy.)	...	Rajasthan	24	39	72	47	− 38	52	+ 0	07
Adilabad	...	Andhra P.	19	37	78	30	− 16	00	+ 0	03
Adoni	...	Andhra P.	15	38	77	19	− 20	44	+ 0	03
Agartala	...	Tripura	23	49	91	17	+ 35	08	− 0	06
Agra	...	U.P.	27	11	78	02	− 17	52	+ 0	03
Ahmedabad	...	Gujarat	23	02	72	36	− 39	36	+ 0	07
Ahmednagar	...	Maharastra	19	05	74	48	− 30	48	+ 0	05
Aijawl	...	Mizoram	23	44	92	45	+ 41	00	− 0	07
Ajanta	...	Maharastra	20	33	75	48	− 26	48	+ 0	04
Ajmer	...	Rajasthan	26	27	74	38	− 31	28	+ 0	05
Akola	...	Maharastra	20	42	77	02	− 21	52	+ 0	04
Alibag	...	Maharastra	18	39	72	54	− 38	24	+ 0	06
Aligarh	...	U.P.	27	54	78	04	− 17	44	+ 0	03
Alipurduar	...	W.B.	26	28	89	32	+ 28	08	− 0	05
Allahabad	...	U.P.	25	28	81	52	− 2	32	+ 0	00
Alleppy	...	Kerala	9	30	76	23	− 24	28	+ 0	04
Almora	...	Uttaranchal	29	36	79	40	− 11	20	+ 0	02
Alwar	...	Rajasthan	27	34	76	38	− 23	28	+ 0	04
Amarkantak	...	M.P.	22	40	81	45	− 3	00	0	00
Amaravati	...	Maharastra	20	56	77	45	− 19	00	+ 0	03
Amarnath	–	J & K	34	12	75	30	− 28	00	+ 0	05
Ambala	...	Haryana	30	23	76	46	− 22	56	+ 0	04
Amber	...	Rajasthan	26	59	75	52	− 26	32	+ 0	04
Ambikapur	...	Chhatisgarh	23	07	83	11	+ 2	44	0	00
Amethi	...	U.P.	26	08	81	50	− 2	40	+ 0	02
Amingaon	...	Assam	26	12	91	42	+ 36	48	− 0	06
Amlapuram	...	Andhra P.	16	35	82	01	− 1	56	+ 0	00
Amreli	...	Gujarat	21	36	71	15	− 45	00	+ 0	07
Amritsar	...	Punjab	31	38	74	53	− 30	28	+ 0	05
Anakapalle	...	Andhra P.	17	41	83	01	+ 2	04	0	00
Anamalai	...	Tamil Nadu	10	38	76	50	− 22	40	+ 0	04
Anand	...	Gujarat	22	32	73	00	− 38	00	+ 0	06
Anantanag	...	J. & K.	33	44	75	09	− 29	24	+ 0	05
Anantapur	...	Andhra P.	14	41	77	37	− 19	32	+ 0	03
Angul	...	Orissa	20	48	85	01	+ 10	04	− 0	02
Ankleswar	...	Gujarat	21	38	70	03	− 49	48	+ 0	08
Arambag	...	W.B.	23	53	87	47	+ 21	08	− 0	04
Arcot	...	Tamil Nadu	12	56	79	24	− 12	24	+ 0	02
Arrah	...	Bihar	25	33	84	40	+ 8	40	− 0	01
Arvi	...	Maharastra	20	59	78	14	− 17	04	+ 0	03
Asansol	...	W.B.	23	42	86	58	+ 17	52	− 0	03
Aurangabad	...	Maharastra	19	52	75	18	− 28	48	+ 0	05

Note : When the longitude of the place is more than 82° 30' the correction to get I.S.T. from L.M.T. from the Table will be negative, when less, the correction is positive.

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE			Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
			°	'	°	'	m	s	m	s
Ayodhya	...	U.P.	26	48	82	14	− 1	04	0	00
Azamgarh	...	U.P.	26	03	83'	13	+ 2	52	0	00
Badrinath	...	Uttaranchal	30	44	79	32	− 11	52	+ 0	02
Bakreswar	...	W.B.	23	53	87	22	+ 19	28	− 0	04
Balasore	...	Orissa	21	30	86	55	+ 17	40	− 0	03
Ballia	...	U.P.	25	44	84	11	+ 6	44	− 0	01
Balurghat	...	W.B.	25	14	88	47	+ 25	08	− 0	04
Banda	...	U.P.	25	20	80	22	− 8	32	+ 0	01
Bangalore	...	Karnataka	12	58	77	36	− 19	36	+ 0	02
Bankura	...	W.B.	23	14	87	04	+ 18	16	− 0	03
Bapatla	...	Andhra P.	15	54	80	30	− 8	00	+ 0	01
Barasat	...	W.B.	22	43	88	29	+ 23	56	− 0	04
Bara Banki	...	U.P.	26	56	81	13	− 5	08	+ 0	01
Barauni	...	Bihar	25	29	85	59	+ 13	56	− 0	02
Bardhaman	...	W.B.	23	15	87	54	+ 21	36	− 0	04
Bareilly	...	U.P.	28	21	79	23	− 12	28	+ 0	02
Barharwa	...	Jharkhand	24	52	87	47	+ 21	08	− 0	04
Baripada	...	Orissa	21	56	86	44	+ 16	56	− 0	03
Barpeta	...	Assam	26	20	91	02	+ 34	08	− 0	06
Barrackpur	...	W.B.	22	46	88	24	+ 23	36	− 0	04
Baruipur	...	W.B.	22	21	88	27	+ 23	48	− 0	04
Basirhat	...	W.B.	22	40	88	52	+ 25	28	− 0	04
Batanagar	...	W.B.	22	31	88	15	+ 23	00	− 0	04
Begusarai	...	Bihar	25	25	86	08	+ 14	32	− 0	02
Belgaum	...	Karnataka	15	52	74	32	− 31	52	+ 0	05
Bellary	...	Karnataka	15	10	76	56	− 22	16	+ 0	04
Belur	...	W.B.	22	38	88	18	+ 23	12	− 0	04
Belur	...	Karnataka	13	10	75	52	− 26	48	+ 0	04
Berhampur	...	Orissa	19	18	84	51	+ 9	24	− 0	02
Bermula	...	J. & K.	34	24	74	24	− 32	24	+ 0	05
Bhadrachalam	...	Andhra P.	17	40	80	53	− 6	28	+ 0	01
Bhadrak	...	Orissa	21	08	86	33	+ 16	12	− 0	03
Bhadravati	...	Karnataka	13	52	75	40	− 27	20	+ 0	04
Bhagalpur	...	Bihar	25	15	86	58	+ 17	52	− 0	03
Bharatpur	...	Rajathan	27	13	77	29	− 20	04	+ 0	03
Bhatinda	...	Punjab	30	12	74	56	− 30	16	+ 0	05
Bhatpara	...	W.B.	22	56	88	26	+ 23	44	− 0	04
Bhavnagar	...	Gujarat	21	46	72	11	− 41	16	+ 0	07
Bhilainagar	...	Chattisgarh	21	11	81	20	− 4	40	+ 0	01
Bhopal	...	M.P.	23	16	77	25	− 20	20	+ 0	03
Bhubaneswar	...	Orissa	20	15	85	50	+ 13	20	− 0	02
Bhuj	...	Gujarat	23	16	69	48	− 50	48	+ 0	08
Bhusawal	...	Maharastra	21	02	75	47	− 26	52	+ 0	04
Bijapur	...	Karnataka	16	51	75	44	− 27	04	+ 0	04
Bijnor	...	U.P.	29	23	78	11	− 17	16	+ 0	03
Bikaner	...	Rajasthan	28	01	73	19	− 36	44	+ 0	06
Bilasipara	...	Assam	26	13	90	13	+ 30	52	− 0	05
Bilaspur	...	Chattisgarh	22	05	82	13	− 1	08	0	00
Bilaspur	...	H.P.	31	20	76	45	− 23	00	+ 0	04
Bilimora	...	Gujarat	20	46	72	58	− 38	08	+ 0	06
Bishnupur	...	W.B.	23	05	87	18	+ 19	12	− 0	03

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE		Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
		°	'	°	'	m	s	m	s
Bokaro ...	Jharkhand	23	51	86	02	+ 14	08	− 0	03
Bolpur ...	W.B.	23	40	87	42	+ 20	48	− 0	03
Bolangir ...	Orissa	20	40	83	30	+ 4	00	− 0	01
Bomdila ...	Arunachal P.	27	15	92	25	+ 39	40	− 0	07
Bongaon ...	W.B.	23	04	88	49	+ 25	16	− 0	04
Brindaban ...	U.P.	27	33	77	44	− 19	04	+ 0	03
Broach ...	Gujarat	21	41	73	01	− 37	56	+ 0	06
Bulandshahr ...	U.P.	28	24	77	54	− 18	24	+ 0	03
Bulsar ...	Gujarat	20	36	72	59	− 38	04	+ 0	06
Burnpur ...	W.B.	23	39	86	56	+ 17	44	− 0	03
Buxar ...	Bihar	25	34	84	01	+ 6	04	− 0	01
Calicut (Kozhikode)	Kerala	11	15	75	49	− 26	44	+ 0	04
Cambay :	Gujarat	22	18	72	38	− 39	32	+ 0	07
Cannanore ...	Kerala	11	52	75	25	− 28	20	+ 0	05
Cape Comorin... (Kanniya Kumari)	Tamil N.	8	04	77	34	− 19	44	+ 0	03
Chaibasa	Jharkhand	22	33	85	51	+ 13	24	− 0	02
Chandausi ...	U.P.	28	27	78	49	− 14	44	+ 0	02
Chandannagar...	W.B.	22	52	88	22	+ 23	28	− 0	04
Chandigarh ...	Punjab	30	44	76	53	− 22	28	+ 0	03
Chapra ...	Bihar	25	47	84	43	+ 8	52	− 0	01
Chennai ...	Tamil N.	13	04	80	15	− 9	00	+ 0	01
Chhindwara ...	M.P.	22	03	78	59	− 14	04	+ 0	02
Chidambaram ...	Tamil Nadu	11	24	79	44	− 11	04	+ 0	02
Chingleput ...	Tamil Nadu	12	42	80	01	− 9	56	+ 0	02
Chinsura ...	W.B.	22	54	88	27	+ 23	48	− 0	04
Chirala ...	Andhra P.	15	50	80	22	− 8	32	+ 0	01
Chittaranjan ...	W.B.	23	50	86	50	+ 17	20	− 0	03
Chittoor ...	Andhra P.	13	14	79	04	− 13	44	+ 0	02
Chittorgarh ...	Rajasthan	24	53	74	38	− 31	28	+ 0	05
Chunar ...	U.P.	25	08	82	56	+ 1	44	− 0	00
Churachandpur...	Manipur	24	20	93	40	+ 44	50	− 0	07
Churu ...	Rajasthan	28	18	74	58	− 30	08	+ 0	05
Cochin ...	Kerala	9	58	76	15	− 25	00	+ 0	04
Coimbatore ...	Tamil Nadu	11	00	76	56	− 22	16	+ 0	04
Contai ...	W.B.	21	50	87	48	+ 21	12	− 0	03
Cooch Bihar ...	W.B.	26	19	89	28	+ 27	52	− 0	05
Coonoor ...	Tamil Nadu	11	21	76	49	− 22	44	+ 0	04
Cuddalore ...	Tamil Nadu	11	43	79	49	− 10	44	+ 0	02
Cuddapah ...	Andhra P.	14	28	78	50	− 14	40	+ 0	02
Cuttack ...	Orissa	20	29	85	52	+ 13	28	− 0	02
Daltanganj ...	Jharkhand	24	02	84	04	+ 6	16	− 0	01
Daman ...	Gujarat	20	25	72	53	− 38	28	+ 0	06
Damoh ...	M. P.	23	50	79	29	− 12	04	+ 0	02
Danapur ...	Bihar	25	38	85	05	+ 10	20	− 0	03
Darbhanga ...	Bihar	26	10	85	54	+ 13	36	− 0	02
Darjeeling ...	W. B.	27	03	88	16	+ 23	04	− 0	04
Davangere ...	Karnataka	14	31	75	58	− 26	08	+ 0	04
Dehra Dun ...	Uttaranchal	30	19	78	03	− 17	48	+ 0	03
Dehri ...	Bihar	24	53	84	14	+ 6	56	− 0	01
Delhi ...	Delhi	28	39	77	13	− 21	08	+ 0	03
Deoghar ...	Jharkhand	24	29	86	43	+ 16	52	− 0	03
Dewas ...	M. P.	22	58	76	06	− 25	36	+ 0	04
Dhanbad ...	Jharkhand	23	48	86	27	+ 15	48	− 0	03
Dhanuskodi ...	Tamil Nadu	9	12	79	23	− 12	28	+ 0	02

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE			Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
			°	'	°	'	m	s	m	s
Dhar	...	M.P.	22	36	75	18	− 28	48	+ 0	05
Dharampuri	...	Tamil Nadu	12	08	78	13	− 17	08	+ 0	03
Dharwar	...	Karnataka	15	28	75	01	− 29	56	+ 0	05
Dhenkanal	...	Orissa	20	40	85	38	+ 12	32	− 0	02
Dholpur	...	Rajasthan	26	42	77	56	− 18	16	+ 0	03
Dhubri	...	Assam	26	02	89	59	+ 29	56	− 0	05
Dhulia	...	Maharastra	20	58	74	47	− 30	52	+ 0	05
Diamond Harbour		W. B.	22	12	88	13	+ 22	52	− 0	04
Dibrugarh	...	Assam	27	29	94	55	+ 49	40	− 0	08
Digboi	...	Assam	27	33	95	40	+ 52	40	− 0	09
Digha	...	W. B.	21	40	87	34	+ 20	16	− 0	03
Dispur	...	Assam	26	01	91	52	+ 37	28	− 0	07
Diu	...	Gujarat	20	42	71	01	− 45	56	+ 0	08
Dimapur	...	Nagaland	25	51	93	48	+ 45	12	− 0	07
Dumka	...	Jharkhand	24	16	87	15	+ 19	00	− 0	03
Durg	...	Chattisgarh	21	11	81	21	− 4	36	+ 0	01
Durgapur	...	W. B.	23	30	87	20	+ 19	20	− 0	03
Dwarka	...	Gujarat	22	14	68	58	− 54	08	+ 0	09
Ellora	...	Maharastra	20	02	75	13	− 29	08	+ 0	05
Eluru	...	Andhra P.	16	43	81	09	− 5	24	+ 0	01
Ernakulam	...	Kerala	9	59	76	18	− 24	48	+ 0	04
Erode	...	Tamil Nadu	11	20	77	46	− 18	56	+ 0	03
Etawah	...	U. P.	26	47	79	02	− 13	52	+ 0	02
Faizabad	...	U. P.	26	48	82	08	− 1	28	0	00
Falta	...	W.B.	22	17	88	07	+ 22	28	− 0	04
Farakka	...	W. B.	24	48	87	56	+ 21	44	− 0	04
Faridabad	...	Haryana	28	25	77	22	− 20	32	+ 0	03
Faridkot	...	Punjab	30	40	74	57	− 30	12	+ 0	05
Fatehgarh	...	U. P.	27	23	79	35	− 11	40	+ 0	02
Fatehpur	...	U. P.	25	55	80	47	− 6	52	+ 0	01
Ferozabad	...	U. P.	27	09	78	24	− 16	24	+ 0	03
Ferozepur	...	Punjab	30	55	74	40	− 31	20	+ 0	05
Fulia	...	W.B.	23	14	88	31	+ 24	04	− 0	04
Gandhinagar	...	Gujarat	23	15	72	45	− 39	00	+ 0	06
Gangtok	...	Sikkim	27	20	88	36	+ 24	24	− 0	04
Gaya	...	Bihar	24	48	85	01	+ 10	04	− 0	02
Gaud	...	W.B.	24	54	88	07	+ 22	28	− 0	04
Gauribidanur (Radio Obs.)	...	Karnataka	13	36	77	26	− 20	16	+ 0	03
Ghatal	...	W.B.	22	40	87	44	+ 20	56	− 0	03
Ghatsila	...	Jharkhand	22	35	86	28	+ 15	52	− 0	03
Ghaziabad	...	U.P.	28	40	77	28	− 20	08	+ 0	03
Ghazipur	...	U.P.	25	36	83	36	+ 4	24	− 0	01
Gilgit	...	J. & K.	35	55	74	20	− 32	40	+ 0	05
Gridih	...	Jharkhand	24	10	86	19	+ 15	16	− 0	03
Goalpara	...	Assam	26	10	90	36	+ 32	24	− 0	05
Gobardanga	...	W.B.	22	53	88	45	+ 25	00	− 0	04
Gonda	...	U.P.	27	09	81	57	− 2	12	+ 0	09
Gongotri	...	Uttranchal	30	56	79	02	− 13	52	+ 0	02
Gopalpur	...	Orissa	19	16	84	57	+ 9	48	− 0	02
Gorakhpur	...	U.P.	26	45	83	22	+ 3	28	− 0	01
Gudivada	...	Andhra P.	16	25	81	00	− 6	00	+ 0	01
Gudur	...	Andhra P.	14	09	79	54	− 10	24	+ 0	02
Gulmarg	...	J. & K.	30	03	74	23	− 32	20	+ 0	05

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE	Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
	°	′	°	′	m	s	m	s
Guntur ... Andhra P.	16	18	80	27	− 8	12	− 0	01
Gurdaspur ... Punjab	32	03	75	27	− 28	12	+ 0	05
Gurgaon ... Haryana	28	37	77	04	− 21	44	+ 0	04
Guwahati ... Assam	26	10	91	45	+ 37	00	- 0	06
Gwalior ... M.P.	26	14	78	10	− 17	20	+ 0	03
Habra ... W.B.	22	50	88	38	+ 24	32	− 0	04
Hailakandi ... Assam	24	21	92	34	+ 40	16	− 0	07
Haldia ... W.B.	22	02	88	05	+ 22	20	− 0	04
Haldibari ... W.B.	26	20	88	46	+ 25	04	− 0	04
Hanamkonda ... Andhra P.	18	03	79	32	− 11	52	+ 0	02
Hanle/Mt. Saraswati J. & K. (Indian Astronomical Obsy.)	32	47	78	58	− 14	08	+ 0	03
Hapur ... U.P.	28	43	77	55	− 18	20	+ 0	03
Hardoi ... U.P.	27	20	80	10	− 9	20	+ 0	05
Haridwar ... Uttaranchal	29	56	78	08	− 17	28	+ 0	02
Hassan ... Karnataka	13	00	76	05	− 25	40	+ 0	04
Hathras ... U.P.	27	36	78	06	− 17	36	+ 0	03
Hazaribagh ... Jharkhand	23	59	85	22	+ 11	28	− 0	02
Hindupur ... Andhra P.	13	49	77	32	− 19	52	+ 0	03
Hirakud ... Orissa	21	30	84	00	+ 6	00	− 0	01
Hissar ... Haryana	29	10	75	44	− 27	04	+ 0	04
Hooghly ... W.B.	22	54	88	24	+ 23	36	− 0	04
Hoshiarpur ... Punjab	31	32	75	57	− 26	12	+ 0	04
Hospet ... Karnataka	15	16	76	26	− 24	24	+ 0	04
Howrah ... W.B.	22	36	88	19	+ 23	16	− 0	04
Hubli ... Karnataka	15	20	75	12	− 29	12	+ 0	05
Hyderabad ... Andhra P. (Nizamiah Obsy.)	17	26	78	27	− 16	12	+ 0	03
Ichapur ... W.B.	22	50	88	24	+ 23	36	− 0	04
Imphal ... Manipur	24	48	93	57	+ 45	48	− 0	07
Indore ... M.P.	22	43	75	51	− 26	36	+ 0	04
Itanagar ... Arunachal P.	27	08	93	40	+ 44	40	− 0	07
Itarsi ... M.P.	22	36	77	45	− 18	48	+ 0	03
Jabalpur ... M.P.	23	09	79	57	− 10	12	+ 0	02
Jagdalpur ... Chattisgarh	19	05	82	04	− 1	44	+ 0	00
Jaipur ... Rajasthan	26	55	75	49	− 26	44	+ 0	04
Jairambati ... W.B.	22	55	87	37	+ 20	28	− 0	03
Jaisalmir ... Rajasthan	26	55	70	57	− 46	12	+ 0	06
Jajpur ... Orissa	22	51	86	20	+ 15	20	− 0	03
Jalandhar ... Punjab	31	20	75	34	− 27	44	+ 0	05
Jalgaon ... Maharastra	21	03	75	40	− 27	20	+ 0	04
Jalpaiguri ... W.B.	26	32	88	44	+ 24	56	− 0	04
Jamalpur ... Bihar	25	19	86	32	+ 16	08	− 0	03
Jammu ... J. & K.	32	43	74	52	− 30	32	+ 0	05
Jamnagar ... Gujarat	22	27	70	07	− 49	32	+ 0	08
Jamshedpur ... Jharkhand	22	48	86	11	+ 14	44	− 0	02
Jamunotri ... Uttaranchal	31	01	78	27	− 16	12	+ 0	03
Jangipur ... W. B.	24	28	88	05	+ 22	20	− 0	00
Japal Rangapur (Obsy.) Andhra P.	17	06	78	44	− 15	04	+ 0	03
Jaunpur ... U. P.	25	46	82	42	+ 0	48	− 0	00
Jhansi ... M. P.	25	27	78	33	− 15	48	+ 0	03
Jharia ... Jharkhand	23	50	86	33	+ 16	12	− 0	03
Jharsuguda ... Orissa	21	54	84	00	+ 6	00	− 0	01
Jodhpur ... Rajasthan	26	18	73	02	− 37	52	+ 0	06
Jorhat ... Assam	26	46	94	13	+ 46	52	− 0	08

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE	Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
	°	′	°	′	m	s	m	s
Jowai ... Meghalaya	25	24	92	12	+ 38	48	− 0	06
Junagadh ... Gujarat	21	33	70	27	− 48	12	+ 0	08
Kailasahar ... Tripura	24	22	92	00	+ 38	00	+ 0	06
Kakinada ... Andhra P.	16	57	82	13	− 1	08	+ 0	00
Kalahasti ... Andhra P.	13	45	79	44	− 11	04	+ 0	02
Kalimpong ... W. B.	27	05	88	29	+ 23	44	− 0	04
Kalyan ... Maharastra	19	14	73	10	− 37	20	+ 0	06
Kalyani ... W. B.	23	00	88	28	+ 23	52	− 0	04
Kamarpukur ... W.B.	22	54	87	39	+ 20	36	− 0	03
Kanauj ... U. P.	27	02	79	55	− 10	20	+ 0	02
Kanchipuram ... Tamil Nadu	12	50	79	42	− 11	12	+ 0	02
Kandla ... Gujarat	21	21	71	17	− 44	52	+ 0	07
Kanpur ... U. P.	26	29	80	21	− 8	36	+ 0	01
Kapurthala ... Panjab	31	23	75	24	− 28	24	+ 0	05
Karad ... Maharastra	17	15	74	12	− 33	12	+ 0	05
Kargil ... J. & K.	34	31	76	13	− 25	08	+ 0	04
Karikal ... Pondicherry	10	56	79	51	− 10	36	+ 0	02
Karimganj ... Assam	24	50	92	30	+ 40	00	− 0	07
Karwar ... Karnataka	14	48	74	11	− 33	16	+ 0	05
Katihar ... Bihar	25	34	87	34	+ 20	16	− 0	03
Katni ... M. P.	23	47	80	27	− 8	12	+ 0	01
Katras ... Jharkhand	23	49	86	17	+ 15	08	− 0	02
Kavalur ... Tamil Nadu (Vainu Bappu Obsy.)	12	35	78	50	− 14	40	+ 0	02
Kedarnath ... Uttaranchal	30	44	79	04	− 13	44	+ 0	02
Khajuraho ... M.P.	25	00	79	09	− 9	24	+ 0	02
Khambat ... Gujarat	22	03	72	06	− 41	36	+ 0	07
Khammam ... Andhra P.	17	14	80	06	− 9	36	+ 0	02
Khanda ... M. P.	21	50	76	20	− 24	40	+ 0	04
Kharagpur ... W. B.	22	20	87	20	+ 19	20	− 0	03
Kheda ... Gujarat	22	42	72	42	− 39	12	+ 0	07
Khodad ... Maharastra	19	06	74	03	− 33	48	+ 0	05
Khurda ... Orissa	20	11	85	38	+ 12	32	− 0	02
Kirkee ... Maharastra	18	33	73	54	− 34	24	+ 0	06
Kishanganj ... Bihar	26	10	87	02	+ 18	08	− 0	03
Kodaikanal Solar Obsy. Tamil Nadu	10	14	77	28	− 20	08	+ 0	03
Kohima ... Nagaland	25	41	94	07	+ 46	28	− 0	08
Kolar ... Karnataka	13	09	78	11	− 17	16	+ 0	03
Kolhapur ... Maharastra	16	42	74	14	− 33	04	+ 0	05
Kolkata ... W.B. (Alipore Obsy.)	22	32	88	20 (5*h*53*m*20*s*)	+ 23	20	− 0	04
Kolkata ... W.B. (Presidency College Obsy.)	22	35	88	23 (5*h*53*m*30*s*)	+ 23	30	− 0	04
Kollegal ... Karnataka	12	09	77	09	− 21	24	+ 0	04
Konarak ... Orissa	19	53	86	08	+ 14	32	− 0	02
Koraput ... Orissa	18	50	82	40	+ 0	40	0	00
Kota ... Rajasthan	25	10	75	52	− 26	32	+ 0	04
Kottayam ... Kerala	9	36	76	32	− 23	52	+ 0	04
Krishnagar ... W. B.	23	23	88	30	+ 24	00	− 0	04
Kumbakonam ... Tamil Nadu	10	58	79	25	− 12	20	+ 0	02
Kurnool ... Andhra P.	15	50	78	03	− 17	48	− 0	03
Kurukshetra ... Haryana	29	58	76	51	− 22	36	+ 0	04
Ledo ... Assam	27	18	95	44	+ 52	56	− 0	08
Leh ... J. & K.	34	10	77	35	− 19	40	+ 0	03

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE			Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
			°	′	°	′	m	s	m	s
Lucknow	...	U. P.	26	51	80	56	− 6	16	+ 0	01
Ludhiana	...	Punjab	30	55	75	52	− 26	32	+ 0	04
Lumding	...	Assam	25	46	93	10	+ 42	40	− 0	07
Machilpatnam	...	Andhra P.	16	11	81	07	− 5	32	+ 0	01
Madhupur	...	Jharkhand	24	18	86	37	+ 16	28	− 0	03
Madurai	...	Tamil Nadu	9	58	78	10	− 17	20	+ 0	03
Mahabalipuram	...	Tamil Nadu	12	37	80	14	− 9	04	+ 0	01
Mahbubnagar	...	Andhra P.	16	42	77	58	− 18	08	+ 0	03
Mahe	...	Kerala	11	43	75	33	− 27	48	+ 0	05
Maihar	...	M. P.	24	16	80	49	− 6	44	+ 0	01
Mainpuri	...	U. P.	27	14	79	03	− 13	48	+ 0	02
Maithan	...	Jharkhand	23	54	86	54	+ 17	36	− 0	03
Malda	...	W. B.	25	05	88	09	+ 22	36	− 0	04
Mangalore	...	Karnataka	12	52	74	50	− 30	40	+ 0	05
Marwar	...	Rajasthan	25	43	73	45	− 35	00	+ 0	06
Mathura	...	U. P.	27	28	77	42	− 19	12	+ 0	02
Medak	...	Maharastra	18	02	78	16	− 16	56	+ 0	03
Meerut	...	U. P.	29	01	77	45	− 19	00	+ 0	03
Mercara	...	Karnataka	12	26	75	47	− 26	52	+ 0	04
Mettur	...	Tamil Nadu	11	47	77	48	− 18	48	+ 0	03
Mhow	...	M. P.	22	34	75	47	− 26	52	+ 0	04
Midnapore	...	W. B.	22	26	87	19	+ 19	16	− 0	03
Miraj	...	Maharastra	16	49	74	43	− 31	08	+ 0	05
Mirpur	...	J. & K.	33	12	73	49	− 34	44	+ 0	06
Mirzapur	...	U. P.	25	09	82	33	+ 0	12	0	00
Moradabad	...	U. P.	28	51	78	47	− 14	52	+ 0	02
Morvi	...	Gujarat	22	49	70	49	− 46	44	+ 0	08
Motihari	...	Bihar	26	38	84	54	+ 9	36	− 0	02
Mughal Sarai	...	U. P.	25	17	83	08	+ 2	32	− 0	00
Mumbai	...	Maharastra	18	58	72	51	− 38	36	+ 0	06
Munger	...	Bihar	25	22	86	27	+ 15	48	− 0	03
Murshidabad	...	W. B.	24	12	88	18	+ 23	12	− 0	04
Mussoorie	...	Uttaranchal	30	27	78	06	− 17	36	+ 0	03
Muzaffarnagar	...	U. P.	29	28	77	44	− 19	04	+ 0	03
Muzaffarpur	...	Bihar	26	07	85	22	+ 11	28	− 0	02
Mysore	...	Karnataka	12	18	76	39	− 23	24	+ 0	04
Nabadwip	...	W. B.	23	24	88	24	+ 23	36	− 0	04
Nabha	...	Punjab	30	25	76	09	− 25	24	+ 0	04
Nadiad	...	Gujarat	22	07	72	09	− 41	24	+ 0	07
Namrup	...	Assam	21	12	95	20	+ 51	20	− 0	08
Nagercoil	...	Tamil Nadu	8	11	77	29	− 20	04	+ 0	03
Nagpur	...	Maharastra	21	09	79	05	− 13	40	+ 0	02
Nahan	...	H. P.	30	33	77	21	− 20	36	+ 0	03
Naihati	...	W. B.	22	57	88	28	+ 23	52	− 0	04
Nainital (Monora Peak) (U. P. State Obsy.)	...	Uttaranchal	29	22	79	27	− 12	12	+ 0	02
Nalanda	...	Bihar	25	09	85	25	+ 11	40	− 0	02
Nalbari	...	Assam	26	26	91	30	+ 36	00	− 0	06
Nalgonda	...	Andhra P.	17	04	79	15	− 16	00	+ 0	02
Nanded	...	Maharastra	19	09	77	27	− 20	12	+ 0	03
Nangal	...	Punjab	31	23	76	23	− 24	28	+ 0	04
Nasik	...	Maharastra	20	02	73	50	− 34	40	+ 0	06
Nawabganj	...	U. P.	26	56	82	12	− 1	12	+ 0	00
Neemuch	...	M.P.	24	27	74	52	− 30	32	+ 0	05

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE			Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T			Corr. to *Indian* Sid. Time		
			°	′	°	′		m	s		m	s
Nellore	...	Andhra P.	14	27	80	00	−	10	00	+	0	02
New Delhi	...	Delhi	28	37	77	13	−	21	08	+	0	03
Nizamabad	...	Andhra P.	18	40	78	06	−	17	36	+	0	03
Nowgong	...	Assam	26	21	92	42	+	40	48	−	0	07
Okha	...	Gujarat	22	24	69	06	−	52	36	+	0	09
Ongole	...	Andhra P.	15	30	80	06	−	9	36	+	0	02
Osmanabad	...	Maharastra	18	12	76	03	−	25	48	+	0	04
Palghat	...	Kerala	10	46	76	40	−	23	20	+	0	04
Panaji	...	Goa	15	29	73	49	−	34	44	+	0	06
Panipat	...	Haryana	29	23	77	01	−	21	56	+	0	04
Paradeep	...	Orissa	20	03	86	08	+	14	32	−	0	02
Pasighat	...	Arunachal P.	28	05	95	20	+	51	20	−	0	09
Pathankot	...	Punjab	32	17	75	40	−	27	20	+	0	04
Patiala	...	Punjab	30	19	76	24	−	24	24	+	0	04
Patna	...	Bihar	25	36	85	08	+	10	32	−	0	02
Pilibhit	...	U.P.	28	38	79	51	−	10	36	+	0	02
Pollachi	...	Tamil Nadu	10	39	77	03	−	21	48	+	0	04
Pondicherry	...	Pondichery	11	56	79	50	−	10	40	+	0	02
Porbander	...	Gujarat	21	38	69	37	−	51	32	+	0	08
Port Blair	...	A./N. Island	11	40	92	46	+	41	04	−	0	07
Pudukkottai	...	Tamil Nadu	10	23	78	52	−	14	32	+	0	02
Pune	...	Maharastra	18	31	73	53	−	34	28	+	0	06
Puri	...	Orissa	19	48	85	50	+	13	20	−	0	02
Purnea	...	Bihar	25	47	87	31	+	20	04	−	0	03
Purulia	...	W. B.	23	20	86	23	+	15	32	−	0	03
Quilon	...	Kerala	8	54	76	38	−	23	28	+	0	04
Rae Bareli	...	U. P.	26	14	81	13	−	5	08	+	0	01
Raichur	...	Karnataka	16	12	77	21	−	20	36	+	0	03
Raiganj	...	W. B.	25	36	88	08	+	22	32	−	0	04
Raigarh	...	Chattisgarh	21	54	83	26	+	3	44	−	0	01
Raipur	...	Chattisgarh	21	15	81	37	−	3	32	+	0	01
Rajahmundry	...	Andhra P.	17	00	81	46	−	2	56	+	0	00
Rajgir	...	Bihar	25	02	85	25	+	11	40	−	0	02
Rajkot	...	Gujarat	22	18	70	48	−	46	48	+	0	08
Rajmahal	...	Bihar	25	03	87	53	+	21	32	−	0	04
Rameswaram	...	Tamil Nadu	9	18	79	18	−	12	48	+	0	02
Ramanathapuram		Tamil Nadu	9	22	78	51	−	14	36	+	0	02
Rampur	...	H. P.	31	26	77	38	−	19	28	+	0	03
Rampur	...	U. P.	28	46	79	02	−	13	52	+	0	02
Ranaghat	...	W. B.	23	11	88	37	+	24	28	−	0	04
Ranchi	...	Jharkhand	23	22	85	21	+	11	24	−	0	02
Rangiya	...	Assam	26	30	91	35	+	36	20	−	0	06
Raniganj	...	W. B.	23	35	87	07	+	18	28	−	0	03
Ranikhet	...	Uttaranchal	29	38	79	28	−	12	08	+	0	02
Ratangarh	...	Rajasthan	28	05	74	39	−	31	24	+	0	05
Ratlam	...	M.P.	23	31	75	07	−	29	32	+	0	05
Ratnagiri	...	Maharastra	17	08	73	19	−	36	44	+	0	06
Raxaul	...	Bihar	26	58	84	51	+	9	24	−	0	02
Rewa	...	M.P.	24	33	81	17	−	4	52	+	0	01
Rohtak	...	Haryana	28	54	76	34	−	23	44	+	0	04
Roorkee	...	Uttaranchal	29	52	77	53	−	18	28	+	0	03
Rourkela	...	Orissa	22	25	84	52	+	9	28	−	0	02
Rudraprayag	...	Uttaranchal	30	16	78	59	−	14	04	+	0	02
Sadiya	...	Arunachal P.	27	48	94	38	+	48	32	−	0	08

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE	Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
	°	'	°	'	m	s	m	s
Sagar ... M.P.	23	50	78	50	− 14	40	+ 0	02
Sagar ... Karnataka	16	37	76	51	− 22	36	+ 0	04
Saharanpur ... U.P.	29	58	77	32	− 19	52	+ 0	03
Salem ... Tamil Nadu	11	40	78	10	− 17	20	+ 0	03
Samastipur ... Bihar	25	55	85	50	+ 13	20	− 0	02
Sambalpur ... Orissa	21	27	83	58	+ 5	52	− 0	01
Sanchi ... M.P.	23	28	77	42	− 19	12	+ 0	03
Sangli ... Maharastra	16	52	74	36	− 31	36	+ 0	05
Santiniketan (Bolpur) W.B.	23	39	87	43	+ 20	52	− 0	03
Santipur ... W.B.	23	15	88	29	+ 23	56	− 0	04
Sarnath ... U.P.	25	23	83	02	+ 2	08	0	00
Sasaram ... Bihar	24	57	84	03	+ 6	12	− 0	01
Satara ... Maharastra	17	42	74	00	− 34	00	+ 0	06
Satna ... M.P.	24	34	80	55	− 6	20	+ 0	01
Secunderabad ... Andhra P.	17	27	78	33	− 15	48	+ 0	03
Seoni ... M.P.	22	06	79	35	− 11	40	+ 0	02
Serampur ... W.B.	22	45	88	23	+ 23	32	− 0	04
Shahabad ... U.P.	27	30	80	05	− 9	40	+ 0	02
Shahdol ... M.P.	23	00	81	30	− 4	00	+ 0	03
Shamli ... U.P.	29	27	77	19	− 20	44	+ 0	03
Shikohabad ... U.P.	27	07	78	35	− 15	40	+ 0	03
Shillong ... Meghalaya	25	35	91	53	+ 37	32	− 0	06
Shimoga ... Karnataka	13	56	75	38	− 27	28	+ 0	05
Shivpuri ... M.P.	25	40	77	44	− 19	04	+ 0	03
Sholapur ... Maharastra	17	39	75	55	− 26	20	+ 0	04
Sibsagar ... Assam	27	00	94	37	+ 48	28	− 0	08
Silchar ... Assam	24	50	92	47	+ 41	08	− 0	07
Siliguri ... W.B.	26	44	88	26	+ 23	44	− 0	04
Simla ... H.P.	31	06	77	10	− 21	20	+ 0	03
Sindri ... Jharkhand	23	39	86	31	+ 16	04	− 0	03
Sitamari ... Bihar	26	35	85	32	+ 12	08	− 0	02
Sodepur ... W.B.	22	39	88	23	+ 23	32	− 0	04
Sriharikota ... Andhra P.	13	45	80	15	− 9	00	− 0	01
Srikakulam ... Andhra P.	18	18	83	56	+ 5	44	− 0	01
Srinagar ... J. & K.	34	06	74	48	− 30	48	+ 0	05
Srirangam ... Tamil Nadu	10	52	78	44	− 15	04	+ 0	02
Sultanpur ... U.P.	26	16	82	07	− 1	32	+ 0	00
Sundargarh ... Orissa	22	06	84	00	+ 6	00	− 0	01
Surat ... Gujarat	21	10	72	51	− 38	36	+ 0	06
Surendranagar ... Gujarat	22	43	71	33	− 43	48	+ 0	07
Suri ... W.B.	23	54	87	34	+ 20	16	− 0	03
Tamluk ... W.B.	22	18	87	54	+ 21	36	− 0	04
Tangla ... Assam	26	40	91	54	+ 37	36	− 0	06
Tarakeswar ... W.B.	22	54	88	02	+ 22	08	− 0	04
Tenali ... Andhra P	16	14	80	38	− 7	28	+ 0	01
Tezpur ... Assam	26	37	92	47	+ 41	08	− 0	07
Thaneswar ... Haryana	29	59	76	49	− 22	44	+ 0	04
Thanjavur ... Tamil Nadu	10	47	79	08	− 13	28	+ 0	02
Tinsukia ... Assam	27	28	95	20	+ 51	20	− 0	08
Tiruchirapalli ... Tamil Nadu	10	50	78	42	− 15	12	+ 0	02
Tirunelveli ... Tamil Nadu	8	44	77	41	− 19	16	+ 0	03
Tirupati ... Andhra P.	13	40	79	20	− 12	40	+ 0	02
Trichur ... Kerala	10	30	76	15	− 25	00	+ 0	04
Thiruvananthapuram Kerala	8	31	77	00	− 22	00	+ 0	04
Tura ... Meghalay	25	11	90	13	+ 30	52	− 0	05

Latitude, Longitude and Local Time corrections of principal cities in India

PLACE	Latitude North		Longitude East		Local Time Correction L.M.T. from I.S.T		Corr. to *Indian* Sid. Time	
	°	'	°	'	m	s	m	s
Tuticorin ... Tamil Nadu	8	49	78	09	− 17	24	+ 0	03
Udaigiri ... Orissa	20	06	84	24	+ 7	36	− 0	01
Udaipur ... Rajasthan	24	35	73	44	− 35	04	+ 0	06
Udhagamandalam(Ooty)Tamil Nadu (Radio Ast. Centre)	11	23	76	40	− 23	20	+ 0	04
Udhampur ... J. &. K.	32	56	75	08	− 29	28	+ 0	05
Udupi ... Karnataka	13	20	74	45	− 31	00	+ 0	05
Ujjain ... M.P.	23	11	75	46	− 26	56	+ 0	04
Vadodara ... Gajarat	22	18	73	13	− 37	08	+ 0	06
Vainu Bappu Obsy. Tamil Nadu	12	35	78	50	− 14	40	+ 0	02
Varanasi ... U.P.	25	19	83	01	+ 2	04	0	00
Vellore ... Tamil Nadu	12	55	79	11	− 13	16	+ 0	02
Veraval ... Gujarat	20	53	70	26	− 48	16	+ 0	08
Vidar ... Karnataka	17	56	77	35	− 19	40	+ 0	02
Vidisha ... M.P.	23	32	77	51	− 18	36	+ 0	03
Vijayawada ... Andhra P.	16	32	80	36	− 7	36	+ 0	01
Visakhapatnam ... Andhra P.	17	43	83	19	+ 3	16	− 0	01
Vizianagram ... Andhra P.	18	07	83	26	+ 3	44	− 0	01
Waltair ... Andhra P.	17	47	83	12	+ 2	48	− 0	00
Warangal ... Andhra P.	17	58	79	40	− 11	20	+ 0	02
Wardha ... Maharastra	20	44	78	37	− 15	32	+ 0	03
Yeotmal ... Maharastra	20	25	78	08	− 17	28	+ 0	03

Note :- Correction to get *Indian Sidereal Time* is obtained at the rate of 0.66 seconds per degree of longitude from the *Central Meridian of India* (*viz*, 82°E 30') and positive for west and negative for east *e.g.*, for Delhi, longitude is 77°E 13'. Difference from Central Meridian of India (*viz*. 82°E 30') is 5°17'. Multiplying 5°17' by 0.66 sec., the result is +3*s*.

Standard Time of India

Central Meridian of India

The International Time Zone is based on 24 Standard Meridians each 15° of arc or one hour in time appart, starting from Greenwich meridian comprising of 360° degrees. All places within these Standard Meridians having the same Standard time is regarded as the most scientific system and leads to World uniformity.

The local time of a place in a country differs from place to place which is determined according to longitude of the place. Though the use of local time is most scientific, but it leads t o endless confusion for civil purposes. In India, where longitudinal extent is between 68°07' to 97°25'E. Long. the local time obtained from the longitudes of places varies nearly from 4*h* 32*m* to 6*h* 30*m*. *So adoption of local time for civil purposes is found to be most inconvenient.* To avoid the inconveniences the local time of the central place of the country has been taken and the Central Meridian of India has been selected at a place having 82°30' East longitude and 23°11' North latitude (latitude of Ujjain).

This time is adopted as the Indian Standard Time which is related to the local mean time of 82°30'E meridian which is 5*h* 30*m* ahead of Greenwich.

Cities of Bangladesh and Pakistan

The corrections to get the local time (L.M.T.) for cities in Bangladesh and Pakistan are given with reference to the Zonal Standard Time (6*h* ahead of G.M.T. for Bangladesh and 5*h* for Pakistan) and also with reference to the Indian Standard Time ($5^1/_2$ *h* ahead of G.M.T.).

Bangladesh (formerly East Pakistan) observed Bengal Time ($6^1/_2{}^h$ ahead of G.M.T.) for civil purposes and Pakistan Standard time same as I.S.T., for Railway and Postal work etc. up to 30-9-51. From 1st October 1951 East Pakistan (now Bangladesh) Standard Time is 30 minutes more than I.S.T. and West Pakistan (now Pakistan) Standard Time is 30 minutes less than I.S.T.

Local time of some cities of neighbouring countries

Bangladesh Std. Time (–)30m = I.S.T.	Latitude North		Longitude East		Local Time Correction L.M.T. from Zonal Std. Time		L.M.T from I. S. T.		Corr. to *Indian* Sid. Time	
(Time Zone : +6h)	°	′	°	′	*m*	*s*	*m*	*s*	*m*	*s*
Barisal	22	42	90	22	+ 1	28	+ 31	28	– 0	05
Bogra	24	51	89	23	– 2	28	+ 27	32	– 0	05
Chandpur	23	14	90	38	+ 2	32	+ 32	32	– 0	05
Chittagong	22	20	91	50	+ 7	20	+ 37	20	– 0	06
Comilla	23	28	91	12	+ 4	48	+ 34	48	– 0	06
Cox Bazar	21	27	92	00	+ 8	00	+ 38	00	– 0	06
Dhaka	23	43	90	25	+ 1	40	+ 31	40	– 0	06
Dinajpur	25	40	88	38	– 5	28	+ 24	32	– 0	04
Faridpur	23	36	89	51	– 0	36	+ 29	24	– 0	05
Gaibanda	25	22	89	33	– 1	48	+ 28	12	– 0	05
Gualnado	23	49	89	45	– 1	00	+ 29	00	– 0	05
Jessore	24	08	89	05	– 3	40	+ 26	20	– 0	04
Ishwordi	23	08	89	12	– 3	12	+ 26	48	– 0	04
Khulna	22	48	89	35	– 1	40	+ 28	20	– 0	05
Kushtia	23	55	89	07	– 3	32	+ 26	28	– 0	04
Mymensing	24	45	90	24	+ 1	36	+ 31	36	– 0	05
Narayanganj	23	38	90	30	+ 2	00	+ 32	00	– 0	05
Nator	24	25	89	02	– 3	52	+ 26	08	– 0	04
Netrakona	24	53	90	45	+ 3	00	+ 33	00	– 0	05
Noakhali	22	48	91	06	+ 4	24	+ 34	24	– 0	06
Pabna	24	01	89	16	– 2	56	+ 27	04	– 0	04
Parbatipur	25	40	88	53	– 4	28	+ 25	32	– 0	04
Rajshahi	24	22	88	36	– 5	36	+ 24	24	– 0	04
Rangpur	25	45	89	15	– 3	00	+ 27	00	– 0	04
Santahar	24	48	89	00	– 4	00	+ 26	00	– 0	04
Sirajganj	24	27	89	44	– 1	04	+ 28	56	– 0	05
Sylhet	24	55	91	52	+ 7	28	+ 37	28	– 0	06
Tangail	24	13	89	55	– 0	20	+ 29	40	– 0	05

Pakistan Standard Time (+) 30 *m* = I.S.T.

(Time Zone : +5h)	°	′	°	′	*m*	*s*	*m*	*s*	*m*	*s*
Bahawalpur	29	24	71	40	– 13	20	– 43	20	+ 0	07
Bannu	33	00	70	36	– 17	36	– 47	36	+ 0	08
Hyderabad	25	23	68	21	– 26	36	– 56	36	+ 0	09
Islamabad	33	42	73	10	– 7	20	– 37	20	+ 0	06
Karachi	24	52	67	03	– 31	48	– 61	48	+ 0	10
Lahore	31	35	74	18	– 2	48	– 32	48	+ 0	05
Multan	30	12	71	28	– 14	08	– 44	08	+ 0	07
Peshawar	34	01	71	34	– 13	44	– 43	44	+ 0	07
Quetta	30	12	67	02	– 31	56	– 61	56	+ 0	10
Rawalpindi	33	35	73	03	– 7	48	– 37	48	+ 0	06
Sukkur	27	43	68	53	– 24	28	– 54	28	+ 0	09

Sri Lanka, Nepal & Bhutan

Place	Time Zone		Latitude North		Longitude East		Local Time Correction L.M.T from Zonal Std.Time		L.M.T from I. S. T.		I.S.T. from Z.S.T		Corr. to Indian Sid. Time	
	h	*m*	°	′	°	′	*m*	*s*	*m*	*s*	*h*	*m*	*m*	*s*
Anuradhapur (Sri Lanka)	+5	30	8	21	80	23	– 8	28	– 8	28	0	0	+ 0	02
Colombo (Sri Lanka)	+5	30	6	56	79	52	– 10	32	– 10	32	0	0	+ 0	02
Galle (Sri Lanka)	+5	30	6	02	80	13	– 9	08	– 9	08	0	0	+ 0	02
Jaffna (Sri Lanka)	+5	30	9	40	80	00	– 10	00	– 10	00	0	0	+ 0	02
Kandy (Sri Lanka)	+5	30	7	18	80	38	– 7	28	– 7	28	0	0	+ 0	01
Trincomalee (Sri Lanka)	+5	30	8	34	81	14	– 5	04	– 5	04	0	0	+ 0	01
Biratnagar (Nepal)	+5	45	26	29	87	17	+ 4	8	+ 19	08	– 0	15	– 0	03
Kathmandu (Nepal)	+5	45	27	42	85	19	– 3	44	+ 11	16	– 0	15	– 0	02
Punakha (Bhutan)	+6	00	27	36	89	50	– 0	40	+ 29	20	– 0	30	– 0	05
Thimpu (Bhutan)	+6	00	27	32	89	53	– 0	28	+ 29	32	– 0	30	– 0	05

'+' in Time Zone is Time ahead of G. M. T. or U. T

Example : Place : Sylhet (Bangladesh) (Long. 91°E52'). Time Zone = +6*h*

L. M. T. from Zonal Standard Time = 91°52' ×4= 367*m* 28*s*=6*h* 7*m* 28*s (–)* 6h (Time Zone)= + 7*m* 28s

L. M. T. from I.S. T= 6*h* 7*m* 28*s*(–) 5*h* 30*m* 0*s* = + 37*m* 28*s*

LOCAL TIME OF SOME FOREIGN CITIES

The adopted Zonal Standard Times of the territories with reference to which the local time corrections for the cities and the reductions to I.S.T have been given are those as in current use. It is likely that before and during the war period some of these standard times were different, but it has not been possible to indicate here all such changes.

In many countries summer time is kept, *i.e.* during the summer months the clocks are advanced usually by one hour. If the recorded time of the event is summer time, it should be converted into the normal standard time of the territory or zone by making necessary correction (generally *minus* 1 hr.) before the reductions for local time and I.S.T. are applied.

(The countries observing Summer Time or Day Light Saving Time during the summer months are marked with asterisks). Detailed information of countries which are observing Summer Time are shown under "Period of Summer Time of Different Countries"

PLACE		Time Zone	Latitude	Longitude	L. M. T. from Zonal Standard Time	I. S. T. from Z. S. T.	Corr. to *Indian* Sid. Time
		h	° ′	° ′	*m* *s*	*h* *m*	*m* *s*
Abu Dhabi	U. A. E.	+ 4	24 28N	54 22E	− 22 32	+ 1 30	+ 0 18
Accra	Ghana	+ 0	5 31N	0 15W	− 1 00	+ 5 30	+ 0 54
Addis Ababa	Ethiopia	+ 3	9 02N	38 44E	− 25 04	+ 2 30	+ 0 29
Aden	Yemen	+ 3	12 45N	45 04E	+ 0 16	+ 2 30	+ 0 25
Akyab	Myanmar	+ 6½	20 09N	92 55E	− 18 20	− 1 00	− 0 07
Alexandria	Egypt*	+ 2	31 12N	29 53E	− 0 28	+ 3 30	+ 0 35
Amsterdam	Netherland	+ 1	52 22N	4 53E	− 40 28	+ 4 30	+ 0 51
Angmagssalik	Greenland	− 3	65 36N	37 41W	+ 29 16	+ 8 30	+ 1 19
Ankara	Turkey*	+ 2	39 57N	32 54E	+ 11 36	+ 3 30	+ 0 33
Athens	Greece	+ 2	37 54N	23 52E	− 24 32	+ 3 30	+ 0 38
Auckland	New Zealand	+ 12	36 52S	174 42E	− 21 12	− 6 30	− 1 01
Baghdad	Iraq	+ 3	33 20N	44 27E	− 2 12	+ 2 30	+ 0 25
Bangkok	Thailand	+ 7	13 44N	100 30E	− 18 00	− 1 30	− 0 12
Beijing	China	+ 8	39 55N	116 25E	− 14 20	− 2 30	− 0 18
Beirut	Lebanon*	+ 2	33 50N	35 25E	+ 21 40	+ 3 30	+ 0 31
Belgrade	Serbia	+ 1	44 50N	20 30E	+ 22 00	+ 4 30	+ 0 41
Berlin	Germany	+ 1	52 32N	13 25E	− 6 20	+ 4 30	+ 0 45
Berne	Switzerland	+ 1	46 57N	7 26E	− 30 16	+ 4 30	+ 0 49
Birmingham	England*	0	52 30N	1 50W	− 7 20	+ 5 30	+ 0 55
Bonn	Germany	+ 1	50 44N	7 04E	− 31 44	+ 4 30	+ 0 50
Boston	U. S. A*	− 5	42 21N	71 04W	+ 15 44	+ 10 30	+ 1 41
Brasilia	Brazil	− 3	16 13S	44 29W	+ 2 04	+ 8 30	+ 1 23
Brisbane	Australia	+ 10	27 28S	153 02E	+ 12 08	− 4 30	− 0 47
Brunei	S. E. Asia	+ 8	4 55N	114 57E	− 20 12	− 2 30	− 0 21
Brussels	Belgium	+ 1	50 52N	4 22E	+ 42 32	+ 4 30	+ 0 51
Bucharest	Romania	+ 2	44 25N	26 07E	− 15 32	+ 3 30	+ 0 37
Budapest	Hungary	+ 1	47 29N	19 03E	+ 16 12	+ 4 30	+ 0 42
Buenos Aires	Argentina	− 3	34 35S	58 20W	− 53 20	+ 8 30	+ 1 32
Cairo	Egypt*	+ 2	30 08N	31 34E	+ 6 16	+ 3 30	+ 0 34
California	U.S.A	− 8	35 07N	117 59W	+ 8 04	+ 13 30	+ 2 12
Cambridge	England	0	52 13N	0 08W	− 0 32	+ 5 30	+ 0 55
Canberra	Australia	+ 10	35 19S	149 00E	− 4 00	− 4 30	− 0 44
Cape Town	South Africa	+ 2	33 56S	18 29E	− 46 04	+ 3 30	+ 0 42
Chicago	U.S.A*	− 6	41 53N	87 38W	+ 9 28	+ 11 30	+ 1 52
Copenhagen	Denmark	+ 1	55 40N	12 30E	− 10 00	+ 4 30	+ 0 46
Damascus	Syria*	+ 2	33 30N	36 14E	+ 24 56	+ 3 30	+ 0 30
Dar-es-Salam	Tanzania	+ 3	6 50S	39 17E	− 22 52	+ 2 30	+ 0 28
Detroit	U.S.A.	− 5	42 20N	83 02W	− 32 08	+ 10 30	+ 1 49
Dublin	Ireland	+ 1	53 20N	6 15W	− 85 00	+ 4 30	+ 0 58
Dubai	U. A. E.	+ 4	25 18N	55 18E	− 18 48	+ 1 30	+ 0 18
Durban	South Africa	+ 2	29 55S	30 56E	+ 4 14	+ 3 30	+ 0 34

Time Zone + Corr. for I. S.T. from Z.S.T = $5^h\ 30^m$

Local Time of Some Foreign Cities

PLACE		Time Zone	Latitude		Longitude		L. M. T. from Zonal Standard Time		I. S. T. from Z. S. T.		Corr. to *Indian* Sid. Time	
		h	°	′	°	′	*m*	*s*	*h*	*m*	*m*	*s*
Edinburgh	Scotland	0	55	56N	3	11W	− 12	44	+ 5	30	+ 0	56
Frankfurt	Germany	+ 1	50	06N	8	40E	− 25	20	+ 4	30	+ 0	48
Geneva	Switzerland	+ 1	46	12N	6	09E	− 35	24	+ 4	30	+ 0	50
Glasgow	Scotland	0	55	52N	4	15W	− 17	00	+ 5	30	+ 0	57
Greenwich	England	0	51	29N	0	00	0	00	+ 5	30	+ 0	54
Hanoi	North Vietnam	+ 7	21	02N	105	52E	+ 3	28	− 1	30	− 0	15
Havana	Cuba*	− 5	23	08N	82	22W	− 29	28	+ 10	30	+ 1	48
Heidelberg	Germany	+ 1	49	24N	8	43E	− 25	08	+ 4	30	+ 0	49
Helsinki	Finland	+ 2	60	09N	24	57E	− 20	12	+ 3	30	+ 0	38
Hongkong	China*	+ 8	22	18N	114	10E	− 23	20	− 2	30	− 0	21
Honolulu	Hawai Island	− 10	22	00N	156	00W	− 24	00	+ 15	30	+ 2	37
Istanbul	Turkey*	+ 2	41	00N	29	00E	− 4	00	+ 3	30	+ 0	35
Jakarta	Indonesia	+ 7	6	16S	106	53E	+ 7	32	− 1	30	− 0	16
Johanesberg	South Africa	+ 2	26	15S	28	00E	− 8	00	+ 3	30	+ 0	36
Jerusalem	Israel	+ 2	31	46N	35	14E	+ 20	56	+ 3	30	+ 0	31
Jamaica	West Indies	− 5	18	00N	76	48W	− 7	12	+ 10	30	+ 1	45
Khartoum	Sudan*	+ 2	15	35N	32	35E	+ 10	20	+ 3	30	+ 0	33
Kabul	Afghanistan	+ 4½	34	33N	69	12E	+ 6	48	+ 1	00	+ 0	09
Kandahar	Afghanistan	+ 4½	31	32N	65	30E	− 8	00	+ 1	00	+ 0	11
Kuala Lumpur	Malaysia	+ 8	3	09N	101	43E	− 73	08	− 2	30	− 0	13
Kuwait	Kuwait	+ 3	29	30N	47	45E	+ 11	00	+ 2	30	+ 0	23
Kwangchow	China	+ 8	23	06N	113	16E	− 26	56	− 2	30	− 0	20
Lagos	Nigeria	+ 1	6	25N	3	27E	− 46	12	+ 4	30	+ 0	52
Las Vegas	U.S.A.	− 8	36	10N	115	08W	+ 19	28	+ 13	30	+ 2	10
Leipzig	Germany	+ 1	51	20N	12	23E	− 10	28	+ 4	30	+ 0	46
Leeds	England*	0	53	50N	1	35W	− 6	20	+ 5	30	+ 0	55
Leningrad	U.S.S.R.	+ 3	59	57N	30	18E	− 58	48	+ 2	30	+ 0	34
Lhasa	Tibet	+ 6	29	40N	91	07E	+ 4	28	− 0	30	− 0	06
Lima	Peru	− 5	12	02S	77	02W	− 8	08	+ 10	30	+ 1	45
Lisbon	Portugal	+ 1	38	43N	9	11W	− 36	44	+ 4	30	+ 1	00
Liverpool	England*	0	53	25N	2	55W	− 11	40	+ 5	30	+ 0	56
London	England*	0	51	32N	0	05W	− 0	20	+ 5	30	+ 0	54
Los Angeles	U.S.A.*	− 8	34	03N	118	17W	+ 6	52	+ 13	30	+ 2	12
Madrid	Spain	+ 1	40	25N	3	41W	− 74	44	+ 4	30	+ 0	57
Manchester	England*	0	53	30N	2	15W	− 9	00	+ 5	30	+ 0	56
Mandlay	Myanmar	+ 6½	22	00N	96	05E	− 5	40	− 1	00	− 0	09
Manila	Philippines	+ 8	14	30N	121	30E	+ 6	00	− 2	30	− 0	26
Mecca	Saudi Arabia	+ 3	21	25N	39	54E	− 20	24	+ 2	30	+ 0	28
Melbourne	Australia	+ 10	37	50S	144	59E	− 20	04	− 4	30	− 0	41
Mexico City	Mexico	− 6	19	26N	99	01W	− 36	04	+ 11	30	+ 1	59
Milan	Italy*	+ 1	45	28N	9	11E	− 23	16	+ 4	30	+ 0	48
Mombasa	Kenya	+ 3	4	00S	39	40E	− 21	20	+ 2	30	+ 0	28
Montreal	Canada*	− 5	45	30N	73	34W	+ 5	44	+ 10	30	+ 1	43
Moscow	U.S.S.R.	+ 3	55	45N	37	34E	− 29	44	+ 2	30	+ 0	30
Moulmein	Myanmar	+ 6½	16	30N	97	38E	+ 0	32	− 1	00	− 0	10
Munich	Germany	+ 1	48	08N	11	35E	− 13	40	+ 4	30	+ 0	46
Nairobi	Kenya	+ 3	1	18S	36	52E	− 32	32	+ 2	30	+ 0	30
New Castle	England*	0	52	27N	9	04W	− 36	16	+ 5	30	+ 1	00
New Orleans	U.S.A.	− 6	29	57N	90	04W	− 0	16	+ 11	30	+ 1	54
New York	U.S.A.*	− 5	40	43N	74	00W	+ 4	00	+ 10	30	+ 1	43
Nuuk	Greenland	− 4	64	11N	51	44W	+ 33	04	+ 9	30	+ 1	29

Time Zone + Corr. for I. S.T. from Z.S.T = $5^h\ 30^m$

Local Time of Some Foreign Cities

PLACE		Time Zone	Latitude	Longitude	L. M. T. from Zonal Standard Time	I. S. T. from Z. S. T.	Corr. to *Indian* Sid. Time
		h	° '	° '	*m* *s*	*h* *m*	*m* *s*
Oman	Muscat	+ 4	23 37N	58 35E	− 5 40	+ 1 30	+ 0 16
Osaka	Japan	+ 9	34 40N	135 30E	+ 2 00	− 3 30	− 0 35
Oslo	Norway*	+ 1	59 54N	10 45E	− 17 00	+ 4 30	+ 0 47
Ottawa	Canada*	− 5	45 24N	75 43W	− 2 52	+10 30	+ 1 44
Paris	France	+ 1	48 50N	2 20E	− 50 40	+ 4 30	+ 0 53
Pegu	Myanmar	+ 6½	17 20N	96 29E	− 4 04	− 1 00	− 0 09
Peking	China	+ 8½	39 55N	116 28E	− 14 08	− 3 00	− 0 22
Penang	China	+ 8	5 25N	100 14E	− 79 04	− 2 30	− 0 12
Perth	Australia	+ 8	32 00S	115 50E	− 16 40	− 2 30	− 0 22
Philadelphia	U.S.A.*	− 5	39 58N	75 17W	− 1 08	+10 30	+ 1 44
Phnom Penh	Cambodia	+ 8	11 35N	104 57E	− 60 12	− 2 30	− 0 15
Port Elizabeth	South Africa	+ 2	33 58S	25 40E	− 17 20	+ 3 30	+ 0 37
Port Louis	Mauritius	+ 4	20 10S	57 30E	− 10 00	+ 1 30	+ 0 15
Prague	Czecho	+ 1	50 05N	14 24E	− 2 24	+ 4 30	+ 0 45
Prome	Myanmar	+ 6½	18 47N	95 15E	− 9 00	− 1 00	− 0 08
Quebec	Canada*	− 5	46 48N	71 13W	+ 15 08	+10 30	+ 1 41
Rangoon	Myanmar	+ 6½	16 47N	96 10E	− 5 20	− 1 00	− 0 09
Rio de Janeiro	Brazil	− 3	22 54S	43 12W	+ 7 12	+ 8 30	+ 1 23
Riyadh	Saudi Arbia	+ 3	24 39N	46 41E	+ 6 44	+ 2 30	+ 0 13
Rome	Italy*	+ 1	41 55N	12 27E	− 10 12	+ 4 30	+ 0 46
Saigon	South Vietnam	+ 8	10 49N	106 41E	− 53 16	− 2 30	− 0 16
San Francisco	U.S.A.*	− 8	37 48N	122 25W	− 9 40	+13 30	+ 2 15
Seoul	South Korea	+ 9	37 31N	127 06E	− 31 36	− 3 30	− 0 29
Shanghai	China	+ 8	31 14N	121 28E	+ 5 52	− 2 30	− 0 26
Sharjah	U.A.E.	+ 4	25 20N	55 24E	− 18 24	+ 1 30	+ 0 18
Singapore	Singapore	+ 8	1 21N	103 54E	− 64 24	− 2 30	− 0 14
Sofia	Bulgaria	+ 2	42 41N	23 21E	− 26 36	+ 3 30	+ 0 39
Stockholm	Sweden	+ 1	59 20N	18 00E	+ 12 00	+ 4 30	+ 0 42
Sydney	Australia	+10	33 52S	151 12E	+ 4 48	− 4 30	− 0 45
Taipei	Taiwan*	+ 8	23 30N	121 00E	+ 4 00	− 2 30	− 0 25
Taskent	U.S.S.R.	+ 6½	41 20N	69 18E	− 82 48	− 1 00	+ 0 09
Tehran	Iran	+ 3	35 41N	51 26E	− 4 16	+ 2 30	+ 0 20
Tokyo	Japan	+ 9	35 40N	139 33E	+ 18 12	− 3 30	− 0 37
Toronto	Canada*	− 5	43 39N	79 23W	− 17 32	+10 30	+ 1 46
Tripoli	Libya	+ 1	23 45N	13 15E	− 7 00	+ 4 30	+ 0 46
Venice	Italy	+ 1	45 27N	12 21E	− 10 36	+ 4 30	+ 0 46
Vancouver	Canada	− 8	49 16N	123 07W	− 12 28	+13 30	+ 2 16
Vienna	Austria	+ 1	48 12N	16 22E	+ 5 28	+ 4 30	+ 0 44
Volgograd	U.S.S.R	+ 4	48 44N	44 25E	− 62 20	+ 1 30	+ 0 25
Warsaw	Poland*	+ 1	52 12N	21 00E	+ 24 00	+ 4 30	+ 0 40
Washington D.C.	U.S.A.*	− 5	38 55N	77 04W	− 8 16	+10 30	+ 1 45
Wellington	New Zealand	+12	41 16S	174 47E	− 20 52	− 6 30	− 1 01
Zurich	Switzerland.	+ 1	47 26N	8 22E	− 26 32	+ 4 30	+ 0 49

N. B. Fig. in col.(5) =Excess of I.S.T. over L. M. T.

Time Zone + Corr. for I.S.T. from Z.S.T. = *5h 30m*

Example for finding I. S. T. and Indian Sidereal time corrections

Example *Place* : New York (Long. 74° 00'W). Time Zone is *−5h*

L.M.T. from Z.S.T. = 74°0' × *4m* = *296m 0s* = *4h 56m*

diff. of L. M. T and Z. S. T. = + *4m 0s*

I. S. T. from Z. S. T. = − *5h* − *5h 30m* = + *10h 30m*

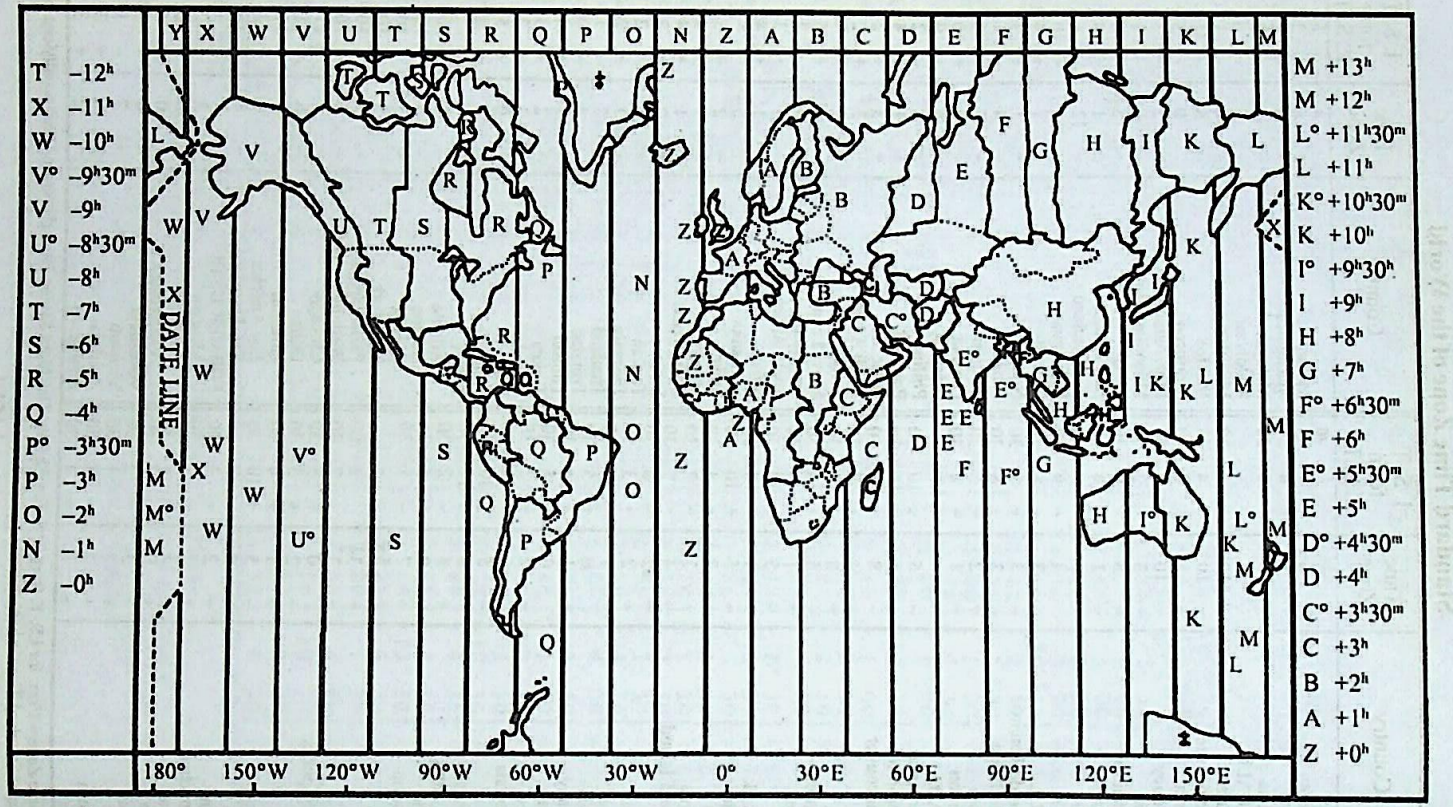
Corr. to Indian Sidereal Time for New York = Difference of long. of the place 74°0'W and 82°30'E = 156°30' = 156°.5'. Multiplying by 0.66 seconds, the correction is + *1m 43s*

Standard Time Zone of the World

Country	Time Zone	I. S. T. form Z. S. T.	Country	Time Zone	I. S. T. form Z. S. T.
	h	*h* *m*		*h*	*h* *m*
Afganistan	+ 4½	+ 1 00	Macao	+ 8	− 2 30
Algeria	+ 1	+ 4 30	Madagascar	+ 3	+ 2 30
Argentina	− 3	+ 8 30	Malaysia	+ 8	− 2 30
AUSTRALIA			Maldivas	+ 5	+ 0 30
Canberra	+ 10	− 4 30	Maurtius	+ 4	+ 1 30
Melbourne	+ 10	− 4 30	Mexico	− 6	+ 11 30
Perth	+ 8	− 2 30	Morrocco	0	+ 5 30
Sydney	+ 10	− 4 30	Mozambique	+ 2	+ 3 30
Baharin	+ 3	+ 2 30	Myanmar (Burma)	+ 6½	− 1 00
Bangladesh	+ 6	− 0 30	Nepal	+ 5¼	− 0 15
Belgium	+ 1	+ 4 30	Netherlands	+ 1	+ 4 30
Bhutan	+ 6	− 0 30	New Zealand	+ 12	− 6 30
Bolivia	− 4	+ 9 30	Nicaragua	− 5	+ 10 30
BRAZIL	− 3	+ 8 30	Nigeria	+ 1	+ 4 30
Rio de Janeiro	− 3	+ 8 30	Norway	+ 1	+ 4 30
Sao Paulo	− 3	+ 8 30	Oman	+ 4	+ 1 30
Burundi	+ 2	+ 3 30	Pakistan	+ 5	+ 0 30
Cameroon	+ 1	+ 4 30	Panama	− 5	+ 10 30
CANADA			Paraguay	− 4	+ 9 30
Montreal	− 5	+ 10 30	Philippines	+ 8	− 2 30
Toronto	− 5	+ 10 30	Portugal	+ 1	+ 4 30
Vancouver	− 8	+ 13 30	Qatar	+ 3	+ 2 30
Chile	− 4	+ 9 30	Saudi Arabia	+ 3	+ 2 30
China	+ 8	− 2 30	Serbia	+ 1	+ 4 30
Columbia	− 5	+ 10 30	Sierra Leone	0	+ 5 30
Congo	+ 1	+ 4 30	Singapore	+ 8	− 2 30
Cuba	− 5	+ 10 30	South Africa	+ 2	+ 3 30
Denmark	+ 1	+ 4 30	Spain	+ 1	+ 4 30
Ecuador	− 5	+ 10 30	Sri Lanka	+ 5½	− −
Egypt	+ 2	+ 3 30	Sudan	+ 2	+ 3 30
Ethiopia	+ 3	+ 2 30	Sweden	+ 1	+ 4 30
Falkland Island	− 4	+ 9 30	Switzerland	+ 1	+ 4 30
Fiji	+ 12	− 6 30	Syria	+ 2	+ 3 30
Finland	+ 2	+ 3 30	Taiwan	+ 8	− 2 30
France	+ 1	+ 4 30	Tanzania	+ 3	+ 2 30
Gambia	0	+ 5 30	Thailand	+ 7	− 1 30
Germany	+ 1	+ 4 30	Trinidad	− 4	+ 9 30
Ghana	0	+ 5 30	Tunisia	+ 1	+ 4 30
Greece	+ 2	+ 3 30	Turkey	+ 2	+ 3 30
Guatemala	− 6	+ 11 30	Uganda	+ 3	+ 2 30
Haiti	− 5	+ 10 30	U.K.	0	+ 5 30
Honduras	− 6	+ 11 30	Uruguay	− 3	+ 8 30
Hong Kong	+ 8	− 2 30	U.S.A.		
Iceland	0	+ 5 30	Atlanta	− 5	+ 10 30
Indonesia	+ 7	− 1 30	Boston	− 5	+ 10 30
India	+ 5½	− −	Detroit	− 5	+ 10 30
Iran	+ 3½	2 00	New York	− 5	+ 10 30
Iraq	+ 3	2 30	Philadelphia	− 5	+ 10 30
Irish Republic	0	+ 5 30	Washington D.C.	− 5	+ 10 30
Israel	+ 2	+ 3 30	Chicago	− 6	+ 11 30
Italy	+ 1	+ 4 30	Dallas	− 6	+ 11 30
Jamaica	− 5	+ 10 30	Houston	− 6	+ 11 30
Japan	+ 9	− 3 30	Los Angeles	− 8	+ 13 30
Jordan	+ 2	+ 3 30	San Fransisco	− 8	+ 13 30
Kumpuchia	+ 7	− 1 30	FORMER USSR		
Kenya	+ 3	+ 2 30	Moscow	+ 3	+ 2 30
Korea	+ 9	− 3 30	Tashkent	+ 6	− 0 30
Kuwait	+ 3	+ 2 30	Vladivostok	+ 10	− 4 30
Laos	+ 7	− 1 30	Venezuela	− 4	+ 9 30
Lebanan	+ 2	+ 3 30	Vietnam	+ 7	− 1 30
Libya	+ 1	+ 4 30	Zamibia	+ 2	+ 3 30
			Zimbabwe	+ 2	+ 3 30

Time Zone + Corr. for I.S. T. from Z. S. T. = 5*h* 30*m*. Day Light Saving Time (Summer Time) usually one hour in advance of Standard Time is kept in some countries.

Standard Time on the World



Some countries keep Daylight Saving Time (Summer Time) which is usually one hour in advance of Standard Time.

Standard Time of the Country = Universal Time + Value from the above Table.

Method for finding out Ascendant (Lagna) and Planets' positions of a Foreign city

Example : Date : 10th May, 2019
Time : $10h\ 30m$ (Local or Zonal Standard Time)
Place : Toronto
Latitude 43°39' North ; Longitude 79°23' West.

The place falls in the Pacific Zone (Eastern Time Zone) where time is $5h$ less than G.M.T. and $10h\ 30m$ less than I.S.T. Hence G.M.T. of the moment is $15h30m$ ($10h\ 30m + 5h\ 00m$) and I.S.T. is ($10h\ 30m + 10h\ 30m$)= $21h00m$.

Local or Zonal Standard Time	=	$10h\ 30m$
L.M.T. correction	=	$-17m\ 32s$
L.M.T. (for calculating Ascendant)	=	$10h\ 12m\ 28s$
I.S.T. = (Z.S.T. + $10h\ 30m$)	=	$21h\ 00m$

As the place is in the West of Greenwich, the L.M.T of the moment is less than G.M.T. by the time equivalent of the longitude of the place. *In finding the Sidereal Time and Ascendant of any moment, the Local mean time is to be used, while for finding the positions of the Moon and Planets I.S.T. is to be used.*

The procedure for obtaining Ascendant from the book *Tables of Ascendants* by N.C. Lahiri is shown below.

The L.M.T. of the moment is $10h\ 12m\ 28s$ which is $1h\ 27m\ 32s$ *before* Noon. The time interval of $1h\ 27m\ 32s$ from $12h$ Noon decreased by 10 seconds per hour (= 14') becomes $1h\ 27m\ 18s$.

Sidereal Time on 10th May, 2019 at $12h$ Noon ($3h\ 10m\ 24s + 0\ m\ 43s$)	=	$3h$	$11m$	$07s$
Correction to Indian Sidereal Time for Toronto	=	+ $01m$	$46s$	
		$3h$	$12m$	$53s$
Decreases Time interval from Noon	= (–)	$1h$	$27m$	$18s$
Less, we get Sidereal Time for the moment		$1h$	$45m$	$35s$

Ascendant— The latitude being 43°39' North, the Table for 44°00' North is to be used.

Now from the book *Tables of Ascendants,* using Table for 44° 00' North according to Sidereal Time $1h\ 45m\ 35s$, the Ascendant comes out as 3^S 18° 29'Applying *Ayanamsa* correction of (–)1°08', we get the Assendant as 3^S17°21' ***i.e.Karkata*** **17°21'.**

Tenth House : From the Table of Tenth House of the same book, according to same Sidereal Time $1h\ 45m\ 35s$, the Tenth House is obtained 0^S 05° 24' by applying *Ayanamsa* correction of (–)1°08', we get the Tenth House as 0^S04°16' ***i.e.Mesha*** **04°16'.**

Moon and Planets : The position of Moon and Planets is to be obtained for $21h\ 00m$ I.S.T. on 10th May, 2019 as per procedure shown in the example at the end of the Table of Logarithms. The longitude of Moon is, however, found to be 3^S 07° 12', *i.e.* ***Karkata*** 07°12'.

STANDARD TIME ZONE AND SUMMER TIME

Standard Time of the world is reckoned from Greenwich, recognized as Prime Meridian of Longitude. The world is divided into 24 standard zones, each of 15° of arc or 1 hour in time apart. The zones to the east of Greenwich are numbered from 1 to 12 with *'minus'* sign indicating that the number of hours is to be subtracted to obtain Greenwich Time. Similarly the zones west of Greenwich are prefixed *'plus'* indicating that the number of hours are to be added to get Greenwich Time. However the Standard Time maintained by many countries does not coincide with this Time Zone.

Standard Time Zone in India

The Central Meridian of India is situated at 82° 30' East longitude and 23° 11' North latitude (latitude of Ujjain). The Indian Standard Time is related to the Local Mean Time of 82° 30' E. Meridian *i.e.*, $5h$ $30m$ ahead of Greenwich. So the Time zone is $5h$ $30m$ in India.

In India, to obtain the *local time of the place* from I.S.T. *add* 4 × [difference of longitude of the place from 82°30' E] when the station is west of 82° 30' E. and *deduct* when the station is east of 82° 30' E. longitude. In other words, Standard Time = Local Time – 4 × (E. Long. –82° 30') minutes of time or Local Time = + 4 × (82° 30' – E. Long.) mins. of time.

In other countries, when the place is east of Greenwich, the L.M.T. of the moment is more than G. M. T. by the time equivalent of the longitude and when the place is in west, it is less than G.M.T.

For example, the longitude of Kolkata is 88° 22'.6 E (Alipore Obsy). The time equivalent of longitude measured from Greenwich (long. 0° 0') at the rate of 4 minutes per degree is 88°22'.6 × 4 = +$5h$ $53m$ $30s$ which is the difference of local time at Kolkata from G.M.T. As I.S.T is $5h$ $30m$ ahead of G.M.T., so the correction to get I.S.T. will be –$23m$ $30s$.

Daylight Saving Time or Summer Time

Day light Saving Time is achieved by advancing the clock by one hour. Adjusting clock time for the use of the added day light on summer evenings is adopted by many countries of the world.

Standard Time Zone in the U.S. and Other Countries

The United States are divided into eight Standard Time Zones as per Uniform Time Act of 1966, which also provides use of **Daylight Saving Time.** The eight Time Zones are designated as Atlantic, Eastern, Central, Mountain, Pacific, Yukon, Alaska-Hawaii and Bering (Samoa). The time in these zones is reckoned from 60th, 75th, 90th, 105th, 120th, 135th, 150th and 165th meridians west of Greenwich. The time in these zones is earlier than Greenwich Mean Time by 4, 5, 6, 7, 8, 9, 10, and 11 hours respectively *i.e.* the Standard time of the zones is obtained by subtracting the hours from G.M.T. or U.T as mentioned of the respective zones.

The Soviet Union lies over 11 Time Zones from $2h$ to $12h$, but maintains its standard time 1 hour fast of the designated zone. It also proclaims daylight saving time as does Europe.

China lies over 5 time zones, but the entire country is placed on zone time *minus* 8 hours with daylight saving from April 12 to September 12. In the Southern Hemisphere many countries observe daylight saving time from October to March. Most countries situated near the equator, however, do not use *'Summer Time'*.

Daylight Saving Time in the U.S.

Under the Uniform Time Act of 1967, all States, the district of Columbia and U.S. territories were to observe Day light Saving Time beginning at **2 a.m. on the last Sunday in April** and ending at **2 a.m. on the last Sunday in October.** As per amendment for exemption, the State of Arizona, Hawaii, Puerto Rico, the Virgin Islands, American Samao and part of Indiana are now exempt.

As per legislation signed on July 8, 1986, the Day Light Saving time started from **first Sunday in April** instead of last Sunday in April will still end on the **last Sunday in October.**

On the first Sunday in April, clocks are set ahead 1 hour at 2.00 a.m. local standard time which becomes 3.00 a.m. local daylight time. On the last Sunday in October, clocks are set back, one hour at 2.00 a.m. local daylight time, which becomes 1.00 a.m. local standard time.

At present all places in the U.S. observe daylight time except Arizona, Hawaii, and most of Indiana. Many other states observe some form of "Summer Time" but do not necessarily change their clocks on the same date as the U.S.

Daylight Saving Time in the U.S.

From 2014 to 2019 the Daylight Saving Time are as follows :

From Second Sunday in March to First Sunday in November.

2014	Daylight	Saving	Time	begins	on	March	9	and	end	on	November	2
2015	"	"	"	"	"	March	8	"	"	"	November	1
2016	"	"	"	"	"	March	13	"	"	"	November	6
2017	"	"	"	"	"	March	12	"	"	"	November	5
2018	"	"	"	"	"	March	11	"	"	"	November	4
2019	"	"	"	"	"	March	10	"	"	"	November	3

(*Source* : Nautical Almanac Office, U.S. Naval Observatory, Washington)

British Summer Time

The United Kingdom kept British Summer Time (BST = GMT + 1*h*) during the following periods.

As per the proposal of European Union, the dates of Summer Time from 2014 to 2019 are as follows :

From last Sunday in March to last Sunday in October

2014	March 30	to	October 26
2015	March 29	to	October 25
2016	March 27	to	October 30
2017	March 26	to	October 29
2018	March 25	to	October 28
2019	March 31	to	October 24

Changes occur at 1 a.m. G.M.T.

(*Source* : H. M. Nautical Almanac Office, Royal Greenwich Observatory, Cambridge).

The Period of Summer Time of different Countries

Daylight Saving Time of one hour (*i.e.* when the clocks are advanced by one hour) is followed every year **from last Sunday in March to last Sunday in October** in the following countries (dates are however provisional).

Austria, Belgium, Czechoslovakia, Denmark, Finland, Germany, Greece, Hungary, Iraq, Italy, Luxembourg, Norway, Poland, Portugal, Spain, Sweden, Switzerland.

In other countries the period of Summer Time is as follows :—

Australia	—	First Sunday in October to First Sunday in April.
Canada	—	Second Sunday in March to First Sunday in Novmber.
New Zealand	—	Last Sunday in September to First Sunday in April
Russia	—	Last Sunday in March to Last Sunday in October.
United Kingdom	—	Last Sunday in March to Last Sunday in October.
United States	—	Second Sunday in March to First Sunday in November.

International Date Line

The International Date Line is a zig-zag line which approximately coincides with the 180th Meridian. The calendar dates are separated from this line. The date is advanced by one day when crossing in westerly direction and set back by one day when crossing in an easterly direction. The line is deflected eastward through the Bering Strait and westward of the Aleutians to prevent separating these area by date. The line is again deflected eastward of the Tonga and New Zealand Islands in the South Pacific.

Proportional Logarithms for finding Planets' Places

Minute	Degrees or Hours													Minute
	0	1	2	3	4	5	6	7	8	9	10	11	12	
0	—	1.3802	1.0792	9031	7781	6812	6021	5351	4771	4260	3802	3388	3010	0
1	3.1584	1.3730	1.0756	9007	7763	6798	6009	5341	4762	4252	3795	3382	3004	1
2	2.8573	1.3660	1.0720	8983	7745	6784	5997	5330	4753	4244	3788	3375	2998	2
3	2.6812	1.3590	1.0685	8959	7728	6769	5985	5320	4744	4236	3780	3368	2992	3
4	2.5563	1.3522	1.0649	8935	7710	6755	5973	5310	4735	4228	3773	3362	2986	4
5	2.4594	1.3454	1.0614	8912	7692	6741	5961	5300	4726	4220	3766	3355	2980	5
6	2.3802	1.3388	1.0580	8888	7674	6726	5949	5289	4717	4212	3759	3349	2974	6
7	2.3133	1.3323	1.0546	8865	7657	6712	5937	5279	4708	4204	3752	3342	2968	7
8	2.2553	1.3258	1.0511	8842	7639	6698	5925	5269	4699	4196	3745	3336	2962	8
9	2.2041	1.3195	1.0478	8819	7622	6684	5913	5259	4690	4188	3737	3329	2956	9
10	2.1584	1.3133	1.0444	8796	7604	6670	5902	5249	4682	4180	3730	3323	2950	10
11	2.1170	1.3071	1.0411	8773	7587	6656	5890	5239	4673	4172	3723	3316	2944	11
12	2.0792	1.3010	1.0378	8751	7570	6642	5878	5229	4664	4164	3716	3310	2938	12
13	2.0444	1.2950	1.0345	8728	7552	6628	5866	5219	4655	4156	3709	3303	2933	13
14	2.0122	1.2891	1.0313	8706	7535	6614	5855	5209	4646	4148	3702	3297	2927	14
15	1.9823	1.2833	1.0280	8683	7518	6600	5843	5199	4638	4141	3695	3291	2921	15
16	1.9542	1.2775	1.0248	8661	7501	6587	5832	5189	4629	4133	3688	3284	2915	16
17	1.9279	1.2719	1.0216	8639	7484	6573	5820	5179	4620	4125	3681	3278	2909	17
18	1.9031	1.2663	1.0185	8617	7467	6559	5809	5169	4611	4117	3674	3271	2903	18
19	1.8796	1.2607	1.0153	8595	7451	6546	5797	5159	4603	4109	3667	3265	2897	19
20	1.8573	1.2553	1.0122	8573	7434	6532	5786	5149	4594	4102	3660	3258	2891	20
21	1.8361	1.2499	1.0091	8552	7417	6519	5774	5139	4585	4094	3653	3252	2885	21
22	1.8159	1.2445	1.0061	8530	7401	6505	5763	5129	4577	4086	3646	3246	2880	22
23	1.7966	1.2393	1.0030	8509	7384	6492	5752	5120	4568	4079	3639	3239	2874	23
24	1.7781	1.2341	1.0000	8487	7368	6478	5740	5110	4559	4071	3632	3233	2868	24
25	1.7604	1.2289	0.9970	8466	7351	6465	5729	5100	4551	4063	3625	3227	2862	25
26	1.7434	1.2239	0.9940	8445	7335	6451	5718	5090	4542	4055	3618	3220	2856	26
27	1.7270	1.2188	0.9910	8424	7318	6438	5706	5081	4534	4048	3611	3214	2850	27
28	1.7112	1.2139	0.9881	8403	7302	6425	5695	5071	4525	4040	3604	3208	2845	28
29	1.6960	1.2090	0.9852	8382	7286	6412	5684	5061	4516	4032	3597	3201	2839	29
30	1.6812	1.2041	0.9823	8361	7270	6398	5673	5051	4508	4025	3590	3195	2833	30
31	1.6670	1.1993	0.9794	8341	7254	6385	5662	5042	4499	4017	3583	3189	2827	31
32	1.6532	1.1946	0.9765	8320	7238	6372	5651	5032	4491	4010	3576	3183	2821	32
33	1.6398	1.1899	0.9737	8300	7222	6359	5640	5023	4482	4002	3570	3176	2816	33
34	1.6269	1.1852	0.9708	8279	7206	6346	5629	5013	4474	3994	3563	3170	2810	34
35	1.6143	1.1806	0.9680	8259	7190	6333	5618	5003	4466	3987	3556	3164	2804	35
36	1.6021	1.1761	0.9652	8239	7174	6320	5607	4994	4457	3979	3549	3157	2798	36
37	1.5902	1.1716	0.9625	8219	7159	6307	5596	4984	4449	3972	3542	3151	2793	37
38	1.5786	1.1671	0.9597	8199	7143	6294	5585	4975	4440	3964	3535	3145	2787	38
39	1.5673	1.1627	0.9570	8179	7128	6282	5574	4965	4432	3957	3529	3139	2781	39
40	1.5563	1.1584	0.9542	8159	7112	6269	5563	4956	4424	3949	3522	3133	2775	40
41	1.5456	1.1540	0.9515	8140	7097	6256	5552	4947	4415	3942	3515	3126	2770	41
42	1.5351	1.1498	0.9488	8120	7081	6243	5541	4937	4407	3934	3508	3120	2764	42
43	1.5249	1.1455	0.9462	8101	7066	6231	5531	4928	4399	3927	3501	3114	2758	43
44	1.5149	1.1413	0.9435	8081	7050	6218	5520	4918	4390	3919	3495	3108	2753	44
45	1.5051	1.1372	0.9409	8062	7035	6205	5509	4909	4382	3912	3488	3102	2747	45
46	1.4956	1.1331	0.9383	8043	7020	6193	5498	4900	4374	3905	3481	3096	2741	46
47	1.4863	1.1290	0.9356	8023	7005	6180	5488	4890	4365	3897	3475	3089	2736	47
48	1.4771	1.1249	0.9330	8004	6990	6168	5477	4881	4357	3890	3468	3083	2730	48
49	1.4682	1.1209	0.9305	7985	6975	6155	5466	4872	4349	3882	3461	3077	2724	49
50	1.4594	1.1170	0.9279	7966	6960	6143	5456	4863	4341	3875	3454	3071	2719	50
51	1.4508	1.1130	0.9254	7947	6945	6131	5445	4853	4333	3868	3448	3065	2713	51
52	1.4424	1.1091	0.9228	7929	6930	6118	5435	4844	4324	3860	3441	3059	2707	52
53	1.4341	1.1053	0.9203	7910	6915	6106	5424	4835	4316	3853	3434	3053	2702	53
54	1.4260	1.1015	0.9178	7891	6900	6094	5414	4826	4308	3846	3428	3047	2696	54
55	1.4180	1.0977	0.9153	7873	6885	6081	5403	4817	4300	3838	3421	3041	2691	55
56	1.4102	1.0939	0.9128	7854	6871	6069	5393	4808	4292	3831	3415	3034	2685	56
57	1.4025	1.0902	0.9104	7836	6856	6057	5382	4798	4284	3824	3408	3028	2679	57
58	1.3949	1.0865	0.9079	7818	6841	6045	5372	4789	4276	3817	3401	3022	2674	58
59	1.3875	1.0828	0.9055	7800	6827	6033	5361	4780	4268	3809	3395	3016	2668	59
	0	1	2	3	4	5	6	7	8	9	10	11	12	

Minute	Degrees or Hours											Minute
	13	14	15	16	17	18	19	20	21	22	23	
0	2663	2341	2041	1761	1498	1249	1015	0792	0580	0378	0185	0
1	2657	2336	2036	1756	1493	1245	1011	0788	0577	0375	0182	1
2	2652	2330	2032	1752	1489	1241	1007	0785	0573	0371	0179	2
3	2646	2325	2027	1747	1485	1237	1003	0781	0570	0368	0175	3
4	2640	2320	2022	1743	1481	1233	0999	0777	0566	0365	0172	4
5	2635	2315	2017	1738	1476	1229	0996	0774	0563	0361	0169	5
6	2629	2310	2012	1734	1472	1225	0992	0770	0559	0358	0166	6
7	2624	2305	2008	1729	1468	1221	0988	0767	0556	0355	0163	7
8	2618	2300	2003	1725	1464	1217	0984	0763	0552	0352	0160	8
9	2613	2295	1998	1720	1459	1213	0980	0759	0549	0348	0157	9
10	2607	2289	1993	1716	1455	1209	0977	0756	0546	0345	0154	10
11	2602	2284	1988	1711	1451	1205	0973	0752	0542	0342	0150	11
12	2596	2279	1984	1707	1447	1201	0969	0749	0539	0339	0147	12
13	2591	2274	1979	1702	1443	1197	0965	0745	0535	0335	0144	13
14	2585	2269	1974	1698	1438	1193	0962	0741	0532	0332	0141	14
15	2580	2264	1969	1694	1434	1190	0958	0738	0529	0329	0138	15
16	2574	2259	1965	1689	1430	1186	0954	0734	0525	0326	0135	16
17	2569	2254	1960	1685	1426	1182	0950	0731	0522	0322	0132	17
18	2564	2249	1955	1680	1422	1178	0947	0727	0518	0319	0129	18
19	2558	2244	1950	1676	1417	1174	0943	0724	0515	0316	0126	19
20	2553	2239	1946	1671	1413	1170	0939	0720	0512	0313	0122	20
21	2547	2234	1941	1667	1409	1166	0935	0716	0508	0309	0119	21
22	2542	2229	1936	1662	1405	1162	0932	0713	0505	0306	0116	22
23	2536	2223	1932	1658	1401	1158	0928	0709	0501	0303	0113	23
24	2531	2218	1927	1654	1397	1154	0924	0706	0498	0300	0110	24
25	2526	2213	1922	1649	1392	1150	0920	0702	0495	0296	0107	25
26	2520	2208	1917	1645	1388	1146	0917	0699	0491	0293	0104	26
27	2515	2203	1913	1640	1384	1142	0913	0695	0488	0290	0101	27
28	2509	2198	1908	1636	1380	1138	0909	0692	0484	0287	0098	28
29	2504	2193	1903	1632	1376	1134	0906	0688	0481	0284	0095	29
30	2499	2188	1899	1627	1372	1130	0902	0685	0478	0280	0091	30
31	2493	2183	1894	1623	1368	1127	0898	0681	0474	0277	0088	31
32	2488	2178	1889	1618	1364	1123	0894	0678	0471	0274	0085	32
33	2483	2173	1885	1614	1359	1119	0891	0674	0468	0271	0082	33
34	2477	2168	1880	1610	1355	1115	0887	0671	0464	0267	0079	34
35	2472	2164	1875	1605	1351	1111	0883	0667	0461	0264	0076	35
36	2467	2159	1871	1601	1347	1107	0880	0663	0458	0261	0073	36
37	2461	2154	1866	1597	1343	1103	0876	0660	0454	0258	0070	37
38	2456	2149	1862	1592	1339	1099	0872	0656	0451	0255	0067	38
39	2451	2144	1857	1588	1335	1095	0869	0653	0448	0251	0064	39
40	2445	2139	1852	1584	1331	1091	0865	0649	0444	0248	0061	40
41	2440	2134	1848	1579	1326	1088	0861	0646	0441	0245	0058	41
42	2435	2129	1843	1575	1322	1084	0858	0642	0438	0242	0055	42
43	2430	2124	1838	1571	1318	1080	0854	0639	0434	0239	0052	43
44	2424	2119	1834	1566	1314	1076	0850	0635	0431	0236	0049	44
45	2419	2114	1829	1562	1310	1072	0847	0632	0428	0232	0046	45
46	2414	2109	1825	1558	1306	1068	0843	0628	0424	0229	0042	46
47	2409	2104	1820	1553	1302	1064	0839	0625	0421	0226	0039	47
48	2403	2099	1816	1549	1298	1061	0835	0622	0418	0223	0036	48
49	2398	2095	1811	1545	1294	1057	0832	0618	0414	0220	0033	49
50	2393	2090	1806	1540	1290	1053	0828	0615	0411	0216	0030	50
51	2388	2085	1802	1536	1286	1049	0825	0611	0408	0213	0027	51
52	2382	2080	1797	1532	1282	1045	0821	0608	0404	0210	0024	52
53	2377	2075	1793	1528	1278	1041	0817	0604	0401	0207	0021	53
54	2372	2070	1788	1523	1274	1038	0814	0601	0398	0204	0018	54
55	2367	2065	1784	1519	1270	1034	0810	0597	0394	0201	0015	55
56	2362	2061	1779	1515	1266	1030	0806	0594	0391	0197	0012	56
57	2356	2056	1774	1510	1261	1026	0803	0590	0388	0194	0009	57
58	2351	2051	1770	1506	1257	1022	0799	0587	0384	0191	0006	58
59	2346	2046	1765	1502	1253	1018	0795	0583	0381	0188	0003	59
	13	14	15	16	17	18	19	20	21	22	23	

Rule :— Add proportional log. of planet's daily motion to log. of time from 5-30 a.m., I.S.T. and the sum will be the log. of the movement required. If the time be after 5-30 a.m., add this movement to the given position of planet, but if before subtract, and the result will be the planet's true place at the given moment (if retrograde, subtract for add). For accurate position of Moon, interpolation correction is to be taken. (See *Interpolation Table* Page No. 47)

Example :— Required longitude of Moon on 14th April, 2019 at 14*h* 09*m* I.S.T. at the time of Transit of Sun into *Mesha Rasi*. Longitude of Moon on 14th April at 5-30 a.m. I.S.T. =3° 15° 23'. Daily motion of Moon on that date is 14° 19'. Log. of 14° 19' = 0.2244. Time of the event from 5*h* 30*m* a.m. = 8*h* 39*m*, log. of which is 0.4432. Sum of these two is (0.2244 + 0.4432) = 0.6676 which is log. of 5°10'. The required longitude of Moon is, therefore, 3°15°23' + 5°10' = 3°20°33' *i.e. Karkata* 20°33'. For greater accuracy, *Interpolation correction* may be taken.

Astronomical Observatories in India

Observatories of Sawai Jai Singh

The first observatory called **Jantar Mantar**, was built by Maharaja Sawai Jai Singh II (1686-1743 A. D.) who was the ruler of princely State of Jaipur from 1699 to 1743 A.D. The word derived from the Sanskrit word *Yantra Mantra* means instruments and formula. His first observatory was built in 1724 at Shajahanabad three kilometers from the city of Delhi (now in Connaught Place, Delhi). He also built four other observatories at Jaipur (1734), Varanasi (1737), Ujjain, and Mathura. The last one is no longer extant. Among these four observatories, the Delhi and Jaipur observatories are effectively existent. Sawai Jai Singh II built observatories to encourage astronomical studies in the country and to popularise astronomy among the people of India. It was his firm faith in astrology that lead him to study with a view to obtaining reliable and correct data about the position of heavenly bodies. His inspiration mainly came from the observatory established by Prince Ulugh Beigh, who established in 1433 A.D. an enormous observatory at Samarkhand (now in Uzbekistan).

The Samrat Yantra, built by Sawai Jai Singh II in 1728 A.D. at Jaipur is the biggest Sundial in the world. It gives local solar time to an estimated accuracy of 15 seconds.

Kodaikanal Observatory

The Kodaikanal Solar Observatory is situated at Palani Hills in Tamil Nadu, which lies over about 7000 ft above sea level and started functioning in 1900. This observatory at Kodaikanal initially had a wide array of spectroscoping equipments specially acquired for solar studies. It has, at present, a large solar telescope combined with a powerful spectrograph, a coronagraph and a monochromatic heliograph. It is one of the three major solar observatories in the world. It is now under the administrative control of the Indian Institute of Astrophysics (IIA) of the Govt. of India.

Nizamiah and Japal-Rangapur Observatories

Nizamiah Observatory was normally set up at Begumpet in 1901 as a private observatory. It was taken over by the then Hyderabad Government of Nizam in 1908, and attached to Osmania University in 1919. Plans for the modernisation of the observatory were initiated by the University Grants Commission in 1954. A 48-inch reflector telescope was installed in the year 1968 at the new site named Japal-Rangapur. In 1983 the historic Begumpet site was vacated and Nizamiah Observatory shifted to a new building in the Osmania University Campus. The observatory, at Japal-Rangapur is, at present, engaged in various astronomical research programmes involving binary stars, spectroscopic observations, stellar dynamics etc.

Uttar Pradesh State Observatory, Naini Tal

This was the first observatory to be set up in India after independence. It was started in 1954 at the old city of Varanasi by the U. P. Government. In November 1955, this observatory with M. K. Vainu Bappu as the Chief Astronomer, shifted to its present site at Manora Peak in Naini Tal. A 40-inch Zeiss reflector telescope was installed in this observatory in 1972. Research works on stars, star clusters and galaxies, Sun and solar activity are being carried out here.

Vainu Bappu Observatory, Kavalur

Kavalur Observatory is located amidst sandal wood forests in Jawadi Hills in the North Arcot District of Tamil Nadu and was set up in 1968 as a part of the Kodaikanal Observatory. On April 1, 1971, the Kodaikanal Observatory was made into the Indian Institute of Astrophysics of the Government of India with headquarters at Bangalore. A 40-inch Carl Zeiss telescope was installed at Kavalur in 1972. On January 6, 1986 the 93-inch telescope was installed here and this is, at present, the largest telescope of Asia. This telescope was completely fabricated and built in India indigenously. This telescope and the Kavalur Observatory was named after its founder, M. K. Vainu Bappu in the year 1986. Various types of research work on Astrophysics are being pursued here.

Udaipur Solar Observatory

The Udaipur Solar Observatory was set up in 1975 on a small island in the Fatehsagar lake in Udaipur, under the aegis of the Vedhshala Trust, Ahmedabad. In December 1981, the observatory was taken by the Government of India's Department of Space, and attached to the Physical Research Laboratory, Ahmedabad. This observatory began its scientific work with an old 10 ft. spar telescope, which has been completely modified. This observatory is, at present completely engaged in helioseismological study.

Gurusikhar Infrared Observatory

The Gurusikhar Observatory is situated on Mount Abu, in South Rajasthan. It is a part of the Physical Research Laboratory (PRL) of Ahmedabad. A telescope of 1.2 m aperture mainly intended for studies in the infrared was installed at Gurusikhar and become operational in 1985. The astronomy group at PRL has developed expertise in focal plane instruments for special studies in infrared astronomy.

Ooty Radio Telescope

The Ooty Radio Telescope is the first major radio astronomical facility available in India. It is situated on Nilgiri Hills in Udhagamandalam (Ooty), Tamil Nadu. It became operational in 1970. One of the principal objectives of this telescope has been the determination of the brightness distribution of a large number of weak and distant extragalactic radio sources.

Giant Metre-wave Radio Telescope (GMRT)

The Giant Meter-wave Radio Telescope is situated near Khodad, about 80 Km north of Pune. It is one of the most powerful radio telescopes of the world. Both the GMRT and the Ooty Radio Telescope, are now under the administrative control of the National Centre for Radio Astrophysics (NCRA) Pune, which is again under the Tata Institute of Fundamental Research (TIFR), Mumbai.

Planetariums in India

The country's first Planetarium was established in India by the Birla Education Trust in co-operation with the Government of West Bengal at Kolkata. The Birla Planetarium was inaugurated on September 28, 1962. This planetarium is the second largest planetarium of the world. The Planetarium has been renamed as M. P. Birla Planetarium. At present 32 Planetariums have been established in India. Names of the Planetariums in India, with their years of opening and number of seats, shown in brackets, where available, are given below according to the years of their installation.

Sl. No.	Name and address	Year of opening & number of Seats
1	2	3
01.	**Birla Planetarium** (Renamed as M. P. Birla Planetarium) 96 Chowringhee Road Kolkata-700 071,West Bengal	1962 (678 seats)
02.	**Sardar V. Patel Planetarium** Baroda Municipal Corporation Sayaji Bang, Bayayi Garden Vadodara-390 018, Gujarat	1976 (125 seats)
03.	**Nehru Planetarium** Dr. Annie Besant Road, Worli Mumbai-400 018, Maharashtra	1977 (583 seats)
04.	**Jawahara Planetarium** Jawaharlal Nehru Memorial Fund Anand Bhawan, Uttar Pradesh Allahabad-211 002	1980 (80 seats)
05.	**Prataprudra Planetarium** Behind Municipal Office Warangal-506 007, Andhra Pradesh	1983 (80 seats)
06.	**Nehru Planetarium** Jawaharlal Nehru Memorial Fund Teen Murti House New Delhi-110 011	1984 (270 seats)
07.	**B.M. Birla Planetarium** Arch. & Cultural Research Institute, Adarsh Nagar Hyderabad-500 463, Andhra Preadesh	1985 (150 seats)
08.	**Nehru Planetarium** Municipal Corporation, Ludhiana Ludhiana	1985
09.	**Sri Sathya Sai Space Theater** Institute for Higher Learning Prasanthi Nilayam Puitiparthi-515 134, Andhra Pradesh	1986 (225 seats)
10.	**B. M. Birla Planetarium** Tamilnadu Science & Technology Centres Chennai-600 025, Tamil Nadu	1987 (250 seats)
11.	**B. M. Birla Planetarium** Birla Institute of Sc. Research Statue Circle, Jaipur-302005 Rajasthan	1987 (140 seats)
12.	**Planetarium** Institute of Human Resources, Manipal	1987
13.	**Modern High School For Girls** 78 Syed Amir Ali Avenue Kolkata-700 019, West Bengal	1988 (40 seats)
14.	**Planetarium** Goto Optical (India) Pvt. Ltd., 3, CD Shivam Chambers 53, Syed Amir Ali Avenue, Kolkata-17	1988 (40 seats)
15.	**Guwahati Planetarium** Government of Assam Science, Tech. & Environ. Dept. Dispur-781 006, Assam	1989 (50 seats)
16.	**Jawaharlal Nehru Planetarium** Bangalore City Corp. Sri T. Chowdalah Road, High Grounds Bangalore-560 001, Karnataka	1989
17.	**Planetarium** Maritime Training Institute Mumbai-Powai	1989 (80 seats)
18.	**Pathani Samanta Planetarium** Planetarium Square Nandankanan Road Bhubaneswar-751 013, Orissa	1990 (140 seats)
19.	**Indira Gandhi Planetarium** Council of Science/Tech. West Boring Canal Road Patna-800 001, Bihar	1992 (270 seats)
20.	**Meghnad Saha Planetarium** University of Burdwan, Golapbag Burdwan-713 104, W. B.	1993
21.	**Planetarium** Raman Science Centre Opposite Gandhi Sagar Nagpur-440 018, Maharashtra	1994 (130 seats)
22.	**Planetarium** Kerala State Sc. & Tech. Museum Vikasbhavan Post Tiruvananthapuram-695 003, Kerala	1994 (250 seats)
23.	**Planetarium** Dhobarbhar Road Rajkot-360 001, Gujarat	1994 (75 seats)
24.	**Planetarium** Malabor Pioneer Hosiery Bldg., Calicut	1994
25.	**Planetarium** Science City, National Council of Science Museum, Kolkata, W.B.	1997 (325 seats)
26.	**Indira Gandhi Planetarium** 9, Mabiullah Road Suraj Kund Park, Lucknow, U.P.	2003 (168 seats)
27.	**N. P. L. Planetarium** National Physical Laboratory Hillside Road, New Delhi-110 012	
28.	**Planetarium** Council of Sc. & Tech. Lucknow, U.P.	
29.	**Planetarium** L. S. College, Muzaffarpur, Bihar	
30.	**Planetarium** Shri Arya Kanya Vidyalaya, Porbundar, Gujarat	
31.	**Planetarium** Govt. College of Engineering Salem, Tamil Nadu	(75 seats)
32.	**Planetarium** Gandhi Hill Foundation, Gandhi Hill, Vijayawada-520 001 Andhra Pradesh	

Source : The IPS Directory of the World Planetarium (1997/98 Edition)

METHOD FOR CASTING OF BIRTH CHART

According to Indian System

For erecting a birth chart of any nativity three items are mainly required *viz.*, date of birth, place of birth and time of birth. The time is required either in local mean time of the place or the present I.S.T. The local time was in vogue all over India before 1st January, 1906. From 1st September, 1947 the use of L.M.T was completely abandoned and I.S.T was adopted for all places of India (*vide* Explanatory note on Time changes in India). ***L.M.T*** will have to be used in calculating the Ascendant (*lagna)* and ***I.S.T*** is to be used for determining the positions of planets.

In some cases the time of birth is supplied in *ghati* (*danda* or *nadika*) and *vighati* (*pala or vinadika).* In that case convert *ghati* and *vighati* in hours and minutes applying the relation that 24 minutes make one *ghati* and 24 secs. make one *vighati* and add the result to the sunrise time or to the sunset time when the *ghati* and *vigahati* is given from sunset in case of birth in night. In this way the birth time is obtained in hours and minutes of the clock. But before that one should be sure that the available sunrise or sunset time is not in L.M.T. nor in Local apparent time, but in I.S.T. In the former case obtain the sunrise time for the date and locality in question in I.S.T. by calculation and then obtain the birth time which is then in I.S.T. Table for conversion of time into L.M.T. from I.S.T. and *vice-versa* has been given in the Ephemeris. Both L.M.T. and I.S.T. would be required in the preparation of horoscope. So keep both the times recorded in the working sheet. For the birth place obtain the latitude and longitude measured from Greenwich. If the exact value of these co-ordinate (*i.e.* lat. and long. of the place) are not known, then work with those of the nearest city available from some standard Atlas. The longitude will be utilised in finding the local time of place and the latitude in determining the *lagna* or Ascendant. From the longitude of the place the local time is determined (*vide* Table showing Lat. Long. and Local time of Places).

Many foreign countries keep Summer Time, *i.e.* they advance their clocks by one hour during summer seasons. In that case the recorded birth time should be reduced by one hour to obtain local standard time of birth. From that time obtain I.S.T. by correction given in Lahiri's *Tables of Ascendants* or *Indian Ephemeris.* From the same book calculate the Sidereal Time at birth and obtain the Ascendant or *Lagna* for the place. Example for finding the *Lagna* and *Dasama* (10th House) has been given elsewhere in this Ephemeris.

Then calculate the longitude of planets according to Indian Standard Time. The longitudes are given in signs (*Rasis*), degrees and minutes. 60 minutes make one degree and 30 degrees make one *rasi.* From I.S.T. as obtained or derived for the birth time, calculate the longitudes of planet (*grahasphuta*). The longitudes are given for 5-30 a.m. I.S.T. in the yearly Ephemeris. If the birth time be exactly 5-30 a.m. or very near to it, then take the given longitudes as those for birth. The method of calculating the longitudes for any hour of I.S.T. has also been illustrated in the Example given in the Ephemeris. For this different tables have been given and the use of the log. tables has been illustrated. For calculation of ascendant and planetary positions of a Foreign City, the method has also been separately shown.

Now the planets and the *lagna* are to be placed in the birth chart. Thereafter *Navamsa* chart can be prepared from the Table of *Navamsa* as given in this ephemeris. The first figure in the longitude of a planet indicate the *Rasi* or sign. For example, if it is zero, place the planet in *Mesha or* Aries, if 1 place it in *Vrisha* or Taurus, 2 in *Mithuna* or Gemini, 3 in *Karkata* or Cancer and so on. The Ascendant or *Lagna* will have to be placed in the birth chart in a similar way. This completes casting of the nativity. The nakshatra division in which the Moon or the planet falls can be ascertained from the table given for the purpose. The *tithi* at birth time can be determined from the difference of longitude of the Moon and Sun. For *Yoga* add the longitude of Sun to that of Moon and consult the table of Yoga from which the number of *Yoga* current at birth time would be obtained. Then the *balance of dasa* is to be calculated. For this take the longitude of Moon and enter the table on the Balance of Vimsottari dasa at the time of birth or Astottari Dasa as is required. Then go on adding the period of dasa of subsequent planets as required. The longitude utilised for all the above purposes are the *nirayana* longitude as given in the Ephemeris. If ayanamsa is added to the *nirayana* longitude, then the Sayana longitude of the planet will be obtained which are, however, not required in casting of a nativity in the Indian system.

GLOSSARY

Definitions of some astronomical, astrological and calendarial terms :

Ephemeris— A tabulation of the positions of a celestial object in an orderly sequence for a number of dates—usually for one whole year.

Zodiac— An imaginary belt stretching about 9° north and 9° south of the ecliptic within which the planets and the Moon remain in course of their movement. In case of the Moon, the deviation from the ecliptic is about ±5°. The belt is divided into 12 equal sectors each of 30° and each sector called a 'sign' or *Rasi*. According to the western system of reckoning (i.e. *Sayana* system) the first *rasi i.e.* Aries starts from the point of intersection of the ecliptic and the equator. There are 12 signs or *rasis* in both the systems, the first being *Mesha* according to Indian system.

Tropical (or Sayana) Longitude— Tropical longitude of any celestial body is defined as the arc of the ecliptic intercepted between the first point of Aries and a perpendicular arc to the ecliptic drawn through the body. It is measured along the ecliptic from the vernal equinoctial point *viz.* point of intersection of the ecliptic and equator of date. Such longitudes are called tropical or *Sayana* longitude. As the equinoctial point is slowly moving backwards at the rate of nearly 50".3 per year due to precession of the equinoxes, the tropical or *Sayana* longitudes of all celestial bodies are gradually increasing on this account. In Indian astronomy, the initial point from which the longitude is measured is a fixed point on the ecliptic, so that the longitude of fixed stars might not undergo any change due to precession of the equinoxes. The angular distance between the above fixed initial point and the vernal equinoctial point is known as *Ayanamsa*. This fixed zodiac system is known as *Nirayana* system of reckoning in Indian Astronomy.

The apparent geocentric *longitude* and *latitude* of planets and stars are referred to the true equinox and ecliptic of date and are corrected for planetary aberration.

Celestial Latitude—Angular distance across the celestial sphere measured north or south from the ecliptic along the great circle passing through the poles of the ecliptic and the object.

Ayanamsa—The vernal equinoctial point or the *First point of Aries* is taken as the starting point for measuring of celestial longitudes. The celestial longitude of a heavenly body measured from this initial point is known as the tropical or *Sayana* longitude. Due to precession of the equinoxes (*ayana chalana)* the V.E. point is receding back over the ecliptic at the rate of about 50".3 per year, as a result of which the longitudes of fixed stars are increasing every year at the same rate. In order to stabilize the zodiac, a point has been taken as the origin which is permanently fixed on the ecliptic and this point is different from the V.E. point. The distance between this fixed initial point and the V.E. point or in other words the tropical longitude of the initial point is called *Ayanamsa*. The zodiac starting from this fixed origin is known as sidereal zodiac or *nirayana* zodiac. The tropical longitude of any celestial object *minus* the amount of ayanamsa on that date gives the *nirayana* longitude. The *nirayana* and the *sayana* zodiac coincided on vernal equinox day of 285 A.D. when the ayanamsa was zero.

Mean Ayanamsa for any date = Mean values of ayanamsa + precession in longitude for that date.

True Ayanamsa = Mean ayanamsa + nutation in longitude.

Transit of Planets—The transit time of Sun, Moon and planets is the time of its entrance into the signs of the zodiac (*rasis)* either tropical or sidereal or into the sidereal nakshatra divisions or its quadrants.

Heliacal Rising and Setting—The planets Mercury to Saturn (as well as the Moon) remain invisible to the naked eye for some days at the time of conjunction with the Sun. The phenomenon of the planets' (or the Moon's) invisibility due to its proximity to the Sun is known as combust or heliacal setting of the planets. The opposite phenomenon is defined as heliacal rising.

Tithi— Tithi or 'Lunar day' is a very important conception in Hindu astronomy. A tithi is completed when the longitude of the Moon gains exactly 12° degrees or its multiple on that of the Sun and as such there are 30 tithis in a lunar month. A difference in longitude of 12° indicates the ending of the 1st tithi, 24° that of the second tithi and so on. Tithis are shown from Sukla 1 to Sukla 15 (*Purnima* or Full Moon) and again from Krishna 1 to Krishna 14 and then Krishna 30 (known as *Amavasya* or New Moon).

Nakshatra—A nakshatra is completed when the *nirayana* longitude of the Moon as measured from the fixed initial point attains a value of 13°20' or a multiple thereof. When the longitude is 13°20', the first nakshatra (*i.e. Asvini)* ends, when the same is 26°40' the second nakshatra (*Bharani)* ends and so on. There are thus 27 nakshatras which completes the circle of 360°.

Yoga—Like nakshatras, there are 27 yogas. A yoga is obtained from the sum of the nirayana longitude of the Moon and the Sun and the sum is divided into 27 parts of 13°20' each. The first yoga (*Viskumbha*) ends when the sum is 13°20', second yoga (*Priti)* ends when it is 26°40' and so on.

Vaidhriti and Vyatipata Yoga— The Vaidhriti yoga is obtained when the sum of the *tropical longitude* of the Sun and the Moon amounts to 360° and Vyatipata yoga when it amounts to 180°. These aspects are treated as special *Yoga.*

Karana—A Karana is completed when the nirayana longitude of the Moon gains every 6° on that of the Sun. In each *tithi* there are two Karanas covering the two halves of the *tithimana.*

Solar months—The Solar months are determined according to the transit time of Sun's entry into twelve signs (like *Mesha, Vrisha* etc.) each of angular distance of 30°. There are various rules for determining the beginning of the solar months which are followed in different States.

Ascendant (Lagna)—The Ascendant or the orient ecliptic point is the point of intersection of the ecliptic at the given time with the eastern horizon of the place. In astrology, it is the first house of the horoscope and is also some times called the horizon. This point of intersection is very important as it is considered as the commencing point of the horoscope. The Earth makes a complete rotation of 360° on its axis from west to east with reference to a fixed star in $23^h\ 56^m\ 4.091^s$ in mean solar time, and due to this rotatory motion, the whole sky appears to come up from below the horizon gradually. It is the '*Rising Sign*' in the eastern horizon. The period of each *lagna* is not equal like the *Rasi* division and slightly varies from place to place. There are 12 *lagnas* and their namings are the same as those of *rasi, e.g. Mesha, Vrisha,* etc.

Tenth House or M.C.—The point of intersection of the ecliptic of the given time with the meridian of the place is the tenth house for that moment. It is also termed as the mid-heaven or the Medium Coeli (M.C.) and is also sometimes called simply the meridian. The longitude of this point is, as usual, measured along the ecliptic from the first point of Aries. The right ascension of the M.C. is the sidereal time of the moment which is often called R.A.M.C.

Lunation—The month or lunation used in astronomy is the mean synodic period, which is the number of days comprised within a large number of lunations divided by the number of lunations. It is the time period from completion of one New Moon to the next New Moon. The present duration of lunation is 29.530589 days or $29^d\ 12^h\ 44^m\ 2.9^s$. The lunation No. 1 is counted from January 16, 1923.

Lunar months—The lunar month is the time-period from completion of new-moon (conjunction of Moon with the Sun) to the next new-moon. There are two kinds of lunar months used in India, the new-moon ending and the full-moon ending. The *new moon ending* lunar months covers the period from one new-moon to the next. This is known as *Amanta* or *Sukladi system.* The day next to *Amavasya* is the first day of the month. The *full-moon ending* lunar month known as *Purnimanta* covers the period from one full moon to the next and begins from the day after full

moon. This is known as the *Krishnadi system.* In this two systems naming of the months in *Sukla paksha* is the same, but in *Krishna paksha* the next lunar month is denoted, *e.g. Chaitra Sukla* in Sukladi system is equivalent to *Chaitra Sudi* in *Krishnadi* system, but *Chaitra Krishna* in Sukladi system is equivalent to *Vaisakha Vadi* in *Krishnadi* system and so on.

Sidereal time— The Sidereal time is the measure of time defined by the diurnal motion of the vernal equinox. Sidereal time system is derived from the Earth's rotation with respect to the stars. Local Sidereal time is defined as the local hour angle of the Vernal Equinox. It is 0^h at the instant when the vernal equinox is at the upper transit of the local meridian. Sidereal time is determined from observation of meridian transits of stars. Sidereal time at any instant is defined to be the west hour angle of the First Point of Aries (Vernal equinoctial point) from the upper meridian of the place. At mean noon *i.e.* 12 hour local mean time on any day sidereal time is the Right Ascension of the fictitious mean Sun, which is defined to be the tropical mean longitude of the Sun at the moment, as affected by mean aberration. Sidereal time system is derived from the Earth's rotation with respect to the stars. The duration of sidereal day in mean solar time is $23^h\ 56^m\ 4.091^s$. Sidereal time for a particular place and particular time increases per day at the rate of $24^h + 3^m\ 56.55536^s$.

Ephemeris time— Due to tidal friction on the Earth's surface there has been regular retardation in the rotation of the Earth, resulting in the gradual lengthening of the day and there is also irregularities in the period of rotation for other reasons. As a result, the *Universal Time* which is the mean solar time of Greenwich determined from meridian observations, does not increase uniformly. So a new measure of time, termed as *Ephemeris Time*, has been introduced from the year 1960. The relation between the two time scales is E.T. = U. T. + D T. From 1984 the term E.T. was replaced by the term *Dynamical Time.*

Universal time—U.T. is the Greenwich Mean Time beginning at midnight.

Terrestrial Dynamical Time— (T.D.T.) is the uniform time system which is used in computing the ephemeris of the bodies of the solar system. T.D.T. is currently ahead of U.T. by a small amount of DT.

Hour Angle—The angular distance on the celestial sphere measured westward, along the celestial equator from the meridian to the hour circle that passes through a celestial object.

Apparent Noon—Apparent Noon is the local mean time of Sun's meridian passage, *viz.*, the mid day.

Equation of time—The equation of time in the sense of correction applied to the local Mean Time to obtain local apparent time, may be deduced as follows : Equation of time = 12^h – Apparent Noon.

Geocentric position— Geocentric position of any heavenly bodies is the apparent position as seen from the centre of the Earth.

Topocentric position—Topocentric position of any heavenly bodies is the position as seen by an observer at any specified point on the Earth's surface.

Heliocentric position—Observations with reference to the centre of the Sun is termed as heliocentric.

Polar Longitudes and Latitudes— The coordinates which were used by the *Surya Siddhanta* to denote star positions. These coordinates are now no longer used. In the diagram at p. 4 the lines ♈B and BS denote Polar Longitude or *Dhruvaka* (= *l*) and Polar latitude or *Vikshepa* (= *d*) respectively.

Right Ascension—Right Ascension of any celestial object in the angular distance on the celestial sphere measured eastward along the celestial equator from the vernal equinox to the hour circle passing through the celestial object.

Declination—It is the angular distance on the celestial sphere north or south of the celestial equator. It is measured along the hour circle passing through the celestial object.

Hour Circle—A great circle on the celestial sphere that passes through the celestial poles and is perpendicular to the celestial equator.

Mean Solar time—A measure of time based on the diurnal motion of the fictitious mean Sun assuming that the Earth's rate of rotation is constant.

Node—The two points on the celestial sphere at which the plane of an orbit of any rotating celestial object intersects a reference plane. In respect of the Moon, these two points are known as *Rahu* (Ascending Node) and *Ketu* (Descending Node).

Occultation—Obscuration of one celestial body by another of greater apparent diameter, especially the passage of the Moon in front of a star or a planet.

Eclipse—Obscuration of a celestial body caused by its passage through the shadow cast by another body.

In a *solar eclipse,* the Earth passes through the shadow cast by the Moon *i.e.* the Moon comes between the Earth and the Sun. It is *total* when the observer is in the Moon's *Umbra, partial* when observer in the Moon's *penumbra* and *annular* when the solar disc is not completely covered but seen as a ring at maximum eclipse. An *annular eclipse* occurs when the apparent disc of the Moon is smaller than that of the Sun.

In a *lunar eclipse,* the Moon passes through the shadow cast by the Earth, *i.e.* the Earth comes between the Sun and the Moon. It is *total* when the Moon passes completely through the shadow cast by the Earth. It is *partial* when the Moon passes partially through the Earth's *umbra* at maximum eclipse. The eclipse is *penumbral* when the Moon passes only through the Earth's *penumbra.* Maximum number of eclipse that may occur in a year may be 7, while the minimum number is 2.

Saros cycle—The laws of peridicity of eclipses at an interval of 18 years and 10 or 11 days.

Apparent place of any celestial object—The position at which the celestial object would actually be seen from the centre of the Earth, displaced by planetary aberration and referred to the true equinox and equator.

Meridian passage—Meridian is defined to be a great circle passing through the zenith and the celestial poles. It corresponds to geographical longitude of a place. A star or a planet passes over the meridian when the sidereal time of the moment becomes equal to the Right Ascension of the star or planet.

Conjunction—When the apparent celestial longitude or Right Ascension of two bodies are the same, the phenomenon is called conjunction.

Opposition—When the apparent celestial longitude of two bodies differs by 180°, the phenomenon is called opposition.

Inferior planets—The planets whose orbits lie within the Earth's orbit round the Sun, are termed as inferior planets. The planets Mercury and Venus are regarded as inferior planets.

Superior planets—The planets whose orbits lie outside that of the Earth are termed as superior planets. The planets Mars, Jupiter, Saturn etc. are superior planets.

Square—When the apparent celestial longitude of two bodies differs by 90° or 270°, the phenomenon is called square.

Direct motion —For orbital motion in the solar system, motion that is counter-clockwise in the orbit as seen from the north pole of the ecliptic. For an object observed on the celsetial sphere, motion that is from west to east, resulting from the relative motion of the object and the Earth (*i.e.* forward motion of any celestial object).

Retrograde motion—Motion that is clockwise in the orbit as seen from the north pole of the ecliptic. For an object observed on the celestial sphere, motion from east to west resulting from the relative motion of the object and the earth.

Although the planets always move in the same direction round the Sun, the apparent motion as seen from the Earth is not always in the same forward direction. They sometimes appear to move also in the backward direction. This is known as *retrograde motion* of a planet.

Greatest Elongation—The instants when the geocentric angular distances of Mercury and Venus are at a maximum from the Sun.

Equinox—The two points on the celestial sphere at which the ecliptic intersects the celestial equator. When the apparent longitude of the Sun is 0°, it is Vernal equinox and when 180°, it is Autumnal equinox. Day and night are equal on these points.

Solstice—The times of solstices are those at which the Sun's apparent longitude is 90° (summer solstice) and 270° (winter solstice). At summer solstice the day is longest and at winter solstice the day is shortest for observers in the northern hemisphere.

Ecliptic—The mean plane of the Earth's orbit around the Sun or simply the apparent path of the Sun in the sky during the course of a year is known as ecliptic. It is a great circle cutting the celestial equator at an angle of about $23\frac{1}{2}°$. The angle varies from 22° 55' to 24° 13'. This is known as the *obliquity of the ecliptic.*

Celestial equator—It is a great circle of the celestial sphere drawn halfway between the poles and is the great circle in which the plane of the earth's equator cuts the celestial sphere.

Inferior and Superior Conjunction—The geocentric inferior conjunction of Mercury and Venus occurs when the planet is between the Earth and the Sun and superior conjunction occurs when the Sun is between the planet and the Earth.

Nutation—Nutation is essentially that part of the precessional motion of the pole of the Earth's equator which depends on the periodic motion of the Sun and the Moon in their orbit around the Earth.

Osculating elements—The osculating elements are the elements of the instantaneous ecliptic orbit of the planets around the Sun determined by its actual position and velocity components for the instant, and so the elements are affected by the attractions of other planets.

Stationary, Direct and Retrograde point of a planet—The position at which the rate of change of the apparent longitude or right ascension is momentarily zero.

Meridian Circle—A great circle passing through the celestial poles and through the zenith of any place on Earth.

Obliquity—The angle between the equatorial and the orbital planes of a body. In Earth the obliquity of the ecliptic is the angle between the planes of the equator and the ecliptic.

Magnitude of a lunar eclipse—The fraction of the lunar diameter obscured by the shadow of the Earth at the greatest phase.

Magnitude of a solar eclipse—The fraction of the solar diameter obscured by the Moon at the greatest phase of a solar eclipse.

Aberration—The apparent angular displacement of observed position of celestial object from its geometric position, caused by the velocity of light in combination with the motions of the observer and of the observed object.

Aphelion—The point on a planetary orbit when it is at the greatest distance from the Sun. The Sun's radius vector is the longest at this point (heliocentric).

Perihelion—The point on a planetary orbit when it is at the least distance from the Sun. The Sun's radius vector is the shortest at this point (heliocentric).

Perigee—The point at which a body in orbit around the Earth is at the least distance from the earth. Perigee is also used with reference to the apparent orbit of the Sun around the Earth.

Apogee—The point at which a body in orbit around the Earth is at the greatest distance from the Earth. Apogee is also used with reference to the apparent orbit of the Sun around the Earth.

Aspect—The apparent position of any of the planets or the Moon relative to the Sun as observed from the Earth and angular relationship between two celestial objects. Details of the degrees of the aspects are discussed in chapter on Aspects and Phenomena.

First Quarter & Last Quarter—When the apparent celestial longitude of Moon differs by 90° and 270° over the Sun's apparent longitude, the phenomena is called first quarter and last quarter respectively.

Constellation—A group of stars, bearing the names of mythical Greek heroes and of objects occurring in Greek legends to identify an area of the celestial sphere.

Twilight—The time interval preceding sunrise is morning twilight and following sunset evening Twilight during which the sky is partially illuminated.

Tropical Year— The tropical year or the year of seasons, is the time of the passage of the Sun from one vernal equinox to the next vernal equinox. The vernal equinoctial point slips to the west at the rate of about 50" per year. Therefore, the Sun has to travel 360° 0' 0" (–)50" = 359° 59' 10" to arrive at the new vernal equinoctial point, hence the duration of the tropical year is ***less*** than that of the sidereal year by about 20 minutes 25 seconds as at present.

Julian Day Number—The Julian Day number is the number assigned to a day in a continuous count of days beginning with the Julian day number 0 assigned to the day starting at Greenwich mean noon on Jan. 1, 4713 B.C.

Julian date—Julian date of any instant is the Julian day number plus the fraction of the day since the preceding noon and it is interval of time in days since 4713 B.C. January 1, Greenwhich Noon. The Julian day begins at noon, whereas the calendar day begins at the preceding midnight and count days from midnight to midnight.

Sidereal Period—Sidereal Period of planets is the time taken to make one complete circuit of the Sun. In case of Moon it is the time taken to make one complete circuit of the earth.

Synodic Period for Moon—Interval between one New Moon and the next; *for planets* the mean interval of time between successive conjunctions of a pair of planets, as observed from the Sun.

Sidereal Year—The sidereal year is the mean period of revolution of the Earth in its orbit with respect to the background stars (from fixed star to fixed star). Due to precession of the equinoxes, the tropical year is less than the sidereal year by the time taken by the Sun to traverse 50" *i.e.* by 0.014172 days or about $20^m\ 25^s$ as at present.

The length of the sidereal year is 365.256363 in mean solar days. The solar day is larger than the sidereal day, because by the time the earth completes a rotation about its axis, the Sun slips nearly a degree to the east, due to motion of the earth in its orbit and it takes a little more time for the Sun to come to the meridian of the place.

Sidereal Day—The Sidereal day is defined in astronomy as the period between two successive meridian passages of the First point of Aries. As this point has a slow westward motion among the fixed stars, the duration of the so called sidereal day is very slightly less than the actual sidereal day or the period of rotation of the Earth.

Eclipse Year—The eclipse year or the draconitic year is the mean interval between successive passages of the Sun through node, *i.e.* the time taken by the Sun to return to the same node, is known as draconitic year or the year of dragons.

Anomalistic Year—The anomalistic year is the mean interval between successive passages of the Earth through perihelion (perigee to perigee).

Savana Year—The months of the calendar consists of 30 days each and the year is of 360 days.

Uttarayana—The period covering the north-ward journey of the Sun is know as *Uttarayana, i.e.* northward passage and it consist of Winter, Spring and Summer seasons. It is the period from winter solstice to summer solstice. The period starts from Sun's entry into Capricornus (Sayana *Makara)* on December 21-22.

Dakshinayana—It is the period from summer solstice to winter solstice *i.e.* southward passage of the Sun and it consist of Rains, Autumn and *Hemanta* seasons. The period starts from Sun's entry into Cancer (Sayana *Karkata*) on June 20-21.

Shri Chaitanyabda—The year 1 begins from Phalguni Purnima of 1407 Saka or 1486 A. D. (Birthday tithi of Shri Chaitanya)

National Calendar of India—The year of National Calendar begins from March 22 in an ordinary year and March 21 in a leap year. First month of the Calender is *Chaitra* (Solar month). The calendar was introduced by the Govt. of India which effect from 22nd March, 1957 corresponding to Chaitra 1, 1879 Saka. With Saka Era as the main Era.

Vikram Samvat (Luni-solar)—Vikram Samvat begins from the tithi of Chaitra Sukla 1 (Sukla Pratipad) according to the *Chaitradi system,* and from Kartika Sukla 1 on *Kartikadi system* (in Gujarat) and from Vaisakhi (solar) in Panjab. The Vikram Samvat started from 57 B.C.

Saka Era (Solar & Luni-solar)—Saka Era begins from (1) March 22 or March 21 of the National Calendar (Solar), (2) From Chaitra Sukla Pratipad (Luni-solar) and (3) Vaisakhadi (Solar). Saka era started from 78 A.D.

Bengali San (Solar)—The year begins from Vaisakhadi (*i.e.* day following transit of the Sun to Mesha rasi). Bengali San 963 started in 1556 A.D.

Fusli San (Luni-solar)—Fusli Era begins from Bhadra Krishna Pratipada tithi of 592 A.D.

Amli San (Luni-solar)—Amli San begins from Bhadra Sukla 12 of 592 A.D.

Kollam Era (Solar)—The year begins from the day of transit of Sun into Simha Rasi and the first month is Simha (Chimgam). The year started from 824 A.D.

Kaliyuga Era (Solar)—The Kaliyuga Era is measured by the number of years elapsed since 3102 B.C. (–3101 A.D.) Feb. 17-18 midnight (Ujjain), when the mean Sun according to Surya Siddhanta became zero.

Buddha Nirvana Era (Luni-Solar)—The year begins from Vaisakhi Purnima (S15) of 545 B.C. (–544 A.D.).

Mahavira Nirvana Era (Luni-Solar)—The year begins from Kartika Sukla 1 of 528 B.C. (–527 A.D.).

Nimbarkabda—The year begins from Lunar Kartika S15 of 3096 B.C.

Vedanga Jyotish year—The year begins from Lunar Magha S1.

Parsi Calendar & Era—The Calendar year begins from the month of Farvardin the year are reckoned from 630 A.D.

Japanese year—The year begins from January 1 of 660 B.C.

Hejira (Lunar)—The year started from 622 A.D. The first month of the year is Muharram of the Islamic calendar. It consists of 12 lunar months, the beginning of each month being determined by the first visibility of the lunar crescent after new-moon. No intercalation is made for determination of month. The year makes a circuit of the seasons in every 33 years.

Barhaspatya Varsha (or the Jovian year) of South India—The year commences from *Prabhava* which are 60 in number and is used as the era in the Tamilian calendar, the year of which begins on April 13-14. It is also used in the Telugu calendar and the Mysorian calendar which are luni-solar and the year begins with lunar *Chaitra* after the new-moon day falling between March 14 and April 13-14.

Barhaspatya Varsha of North India—In North India there are also 60 Jovian years with the same name as in the South starting from *Prabhava* as No. 1. The years are determined by the entry of Jupiter (*Brihaspati)* by mean motion into different *Rasis* beginning from *Kumbha* rasi.

Bhaskarabda of Assam (Solar)—Same as Bengali San (Solar).

Sankarabda of Assam (Luni-Solar)—The year 1 begins from Asvina Sukla Dasami tithi of 1448 A.D. (or 1449 A.D.—in some opinion) birthday tithi of Shri Sankara Deva of Assam.

Byzantine Era — The Byzantine Era used at Constantinople and elsewhere, with a variety of beginning dates of the year, was reckoned from 5509 B. C., the supposed year of Creation.

The Jewish Calendar and Era—The ancient Jewish Calendar which was empirical was replaced probably during fourth century of the Christian Era, by the fixed calendar which is still in use. It is regulated by the 19-year cycle as intorduced by the Babylonians about 380 B.C. The calendar year begins from the month of Tishri. The years are reckoned according to the supposed year of Creation for which the adopted epoch is 3761 B.C., Oct. 7.

Seleucid Era — Adopted in western Asia under the Seleucid monarchy was one of the most widely used era. The era was reckoned from 312 B.C. October 1.

Nabanassar Era (Babylon)—The Era of Nabanassar was extensively used by Ptolemy and early astonomers for dating observations and constructing astronomical tables. It is reckoned from the accession of Nabanassar to the throne of Babylon in 749 B.C. but there is no certain evidence that it was actually used as an historical Era.

The Julian Calendar—The Julian Calendar was established in the Roman Empire by Julius Caesar in 46 B.C. by revising the previous local calendars of Rome, with the advice of the astronomer Sosigenes. It remained in general use in the West until 1582, when it was further modified into the Gregorian Calendar which has come into worldwide use for civil purposes. In the Julian Calendar a common year is defined to comprise 365 days and every 4th year is a leap year comprising 366 days.

The Gregorian Calendar— The Julian year of 365.25 days was longer than the true year of 365.2422 by .0078 days and so discrepancy was noticed in the observance of Easter Day. In 1582 the error in the calendar reckoning accumulated to 10 days. In 1582 Pope Gregory XIII revised the calendar and ordained that Friday, October 5 of that year was to be counted as Friday, October 15. For the future, centurial years that were not divisible by 400 were not to count as leap-years.

As such the century years 1600, 2000, 2400 which are divisible by 400 are leap years whereas the century years 1700, 1800, 1900, 2100 although divisible by 4, are not leap years.

As a result the number of leap-years in 400 years was reduced from 100 to 97 and the year-length of the calendar thus became 365.2425 days, the error being only one day in 3300 years. In Great Britain, it was officially introduced in 1752 when the error accumulated to 11 days and in that year 3rd September of Julian Calendar, Thursday was designated as the 14th September of Gregorian Calendar, Thursday. At the same time in Great Britain the beginning of the year was changed from March 25 to January 1, commencing with the year 1752. In some countries the Gregorian calendar was not adopted until the present century.

Chinese Year and Calendar—The ancient Chinese lunar calendar is divided into 12 months consisting of 29 or 30 days according to duration of lunar month. The calendar is synchronized with the solar year by the addition of extra months at fixed intervals like the Indian luni-solar calendars. Each year is related to the 12 animal designation and the animal designation of the year 2000 is Dragon.

The calendar is based on a sexagenary *i.e.* 60 years cycle. Both the New Year of Gregorian calendar (Jan.1) and their traditional lunar calendars are used and as such two New Year's celebration are held. The Chinese New year begins at the first New Moon after the Sun enters Tropical Aquarius *(Sidereal Makara-Kumbha)*. The day may fall between Jan. 21 and Feb. 19. The date is fixed according to the New Moon of the Far East. In some year the date occurs one day before or after lunar *Magha Sukladi,* as per Indian lunar calendar.

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Rat	Ox	Tiger	Hare	Dragon	Snake	Horse	Sheep	Monkey	Rooster	Dog	Pig	Rat

This cycle of 12 years is repeated upto 60 years. So there are 5 cycles of 12 years each totalling 60 years. The animal name of the year of birth of the person can be known from the above chart. The year *Rat* recur in 2020.

The beginning of the Chinese year with corresponding Chinese names from 2008 to 2020 are shown below :

Year	Animal designation of the Year	Corresponding Chinese name	Sun enters Trop. Aquarius (I.S.T.)	Newmoon following Transit of Trop. Sun	Era beginning
2008	Rat	Wu-zi	Jan. 20, $22^h\ 14^m$	Feb. 7	4645, Feb. 7
2009	Ox	Ji-Chou	Jan. 19, $28^h\ 10^m$	Jan. 26	4646, Jan. 26
2010	Tiger	Geng-Yin	Jan. 20, $9^h\ 58^m$	Feb. 14	4647, Feb. 14
2011	Hare	Ji-Mao	Jan. 20, $15^h\ 49^m$	Feb. 3	4648, Feb. 3
2012	Dragon	Geng-chen	Jan. 20, $21^h\ 40^m$	Jan. 23	4649, Jan. 23
2013	Snake	Xin-si	Jan. 19, $27^h\ 22^m$	Feb. 10	4650, Feb. 10
2014	Horse	Ren-wu	Jan. 20, $9^h\ 21^m$	Jan. 30	4651, Jan. 30
2015	Sheep	Gui-wei	Jan. 20, $15^h\ 13^m$	Jan. 20	4652, Jan. 20
2016	Monkey	Jai-shen	Jan. 20, $20^h\ 57^m$	Feb. 8	4653, Feb. 8
2017	Rooster	Yi-you	Jan. 19, $26^h\ 54^m$	Jan. 27	4654, Jan. 27
2018	Dog	Bing-xu	Jan. 20, $8^h\ 39^m$	Feb. 15	4655, Feb. 15
2019	Pig	Ding-hai	Jan. 20, $14^h\ 30^m$	Feb. 4	4656, Feb. 4
2020	Rat	Wu-Zi	Jan. 20, $20^h\ 25^m$	Jan. 24	4657, Jan. 24

Moslem Festivals

rat Ali's Birthday	Mar. 21	Thurs.	Chehlum	Oct. 19	Sat.
i-Miraj*	Apr. 4	Thurs.	Akhiri Chahar Samba	Oct. 23	Wed.
i-Barat*	Apr. 21	Sun.	Shahadat-e-Imam Hasan	Oct. 28	Mon.
day of Ramadan	May 7	Tues.	**Milad-un-Nabi or Id-e-Milad (Birthday of Prophet Mohammed)**	**Nov. 10**	**Sun.**
hadat-e-Hazrat Ali	May 27	Mon.	Fateha-Duwaz-Dahum or Barah Wafat		
atu'l Vida	May 31	Fri.	Id-e-Maulad		
b-i-Qadr*	Jun. 2	Sun.	Fatiha-Yaz-Dahum (Giarhween Sharif)		
'l Fitr	**Jun. 5**	**Wed.**			
z Zuha (Bakrid)	**Aug. 12**	**Mon.**			
harram	**Sep. 10**	**Tues.**			

bserved in the preceding night. The above mentioned date of Festivals begin at sunset on the ious evening and end at sunset on the dates as tabulated. Dates are subject to actual sighting of crescent after New Moon.

Christian Festivals

phany	Jan. 6	Sun.	Ascension Day	May 30	Thurs.
Wednesday	Mar. 6	Wed.	Whit Sunday-Pentecost	Jun. 9	Sun.
m Sunday	Apr. 14	Sun.	Trinity Sunday	Jun. 16	Sun.
od Friday	**Apr. 19**	**Fri.**	First Sunday in Advent	Dec. 1	Sun.
ster Sunday	Apr. 21	Sun.	**Christmas Day**	**Dec. 25**	**Wed.**

Jewish Festivals

Day of Passover (Pesach)	Apr. 20	Sat.	Day of Atonement (Yom Kippur)	Oct. 9	Wed.
of Weeks (Shavuot)	Jun. 9	Sun.	First Day of Tabernacles (Succoth)	Oct. 14	Mon.
beab	Aug. 10	Sat.	Last Day of Succoth (Simhath Torah)	Oct. 22	Thurs.
h New Year Day (5780)	Sep. 30	Mon.	Hanukah	Dec. 23	Mon.
h Hashanah-1 Tishri)					

Parsi Festivals (Shahenshahi)

nsedji Naoroj (Fixed)	Mar. 21	Thurs.	Parsi New Years' Day(1389) (1 Farvardin)	Ayg. 17	Sat.
rthost-no-Diso	May 24	Fri.	Khordad Sal (Birthday of Prophet Zarthost)	Aug. 22	Thurs.
tha Gahambar	Aug. 14	Wed.			

National Days of India and neighbouring countries

dian Republic Day	Jan. 26	Sat.	Pakistan National Day	Mar. 23	Sat.
i Lanka National Day	Feb. 4	Mon.	Bangladesh National Day	Mar. 26	Tues.
pal National Democracy Day	Feb. 18	Mon.	Indian Independence Day	Aug. 15	Thurs.

Special International Days

ternational Woman's Day	Mar. 8	Fri.	U. N. Charter Day (1945)	Jun. 26	Wed.
orld Health Day	Apr. 7	Sun.	World Population Day	Jul. 11	Thurs.
orld Book Day	Apr. 23	Tues.	World Literacy Day	Sep. 8	Sun.
orld Environment Day	Jun. 5	Wed.	United Nations Day	Oct. 24	Thurs.
ternational Day against Drug Abuse and illicit trafficking	Jun. 23	Sun.	International Day for disabled persons	Dec. 3	Tues.
			Human Rights Day	Dec. 10	Tues.
rosima Day (1945)			Nagasika Day (1945)		

ates of Holidays of Govt. of India offices at Delhi and New Delhi are shown in bold letters.

r Setting at New Pagesetters : Printed at Five Star Printing House, 11A, Garpar Road, Kolkata-9.

LIST OF PUBLICATIONS

(Works by N. C. Lahiri)

1. Lahiri's Indian Ephemeris–*Published annually* – Containing daily *Nirayana* longitudes of planets with their latitudes, declinations, meridian passages and *tithi, nakshatra, yoga*, transits of planets into different *rasis*, etc. An exhaustive aspectarian and phenomena and many other useful data have been given for astronomical and astrological calculation. Issues for 1939 to 2010 out of print; prices for 2016 to 2018 Rs.150.00 each, 2019 Rs.200.00.

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6. Tables of Sunrise, Sunset & Moonrise, Moonset—For all latitudes with variation for each day and for each degree. Rs.120.00

7. Panchanga Darpan *(in Bengali with an Appendix in English)* — For calculation of *tithi, nakshatra* and *yoga* etc. without utilising the longitudes of the Sun and the Moon. The appendix portion gives tables for finding the new-moon and full-moon times during the period from 1500 B.C. to 2500 A.D. 4th edition. (In Press for reprint).

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